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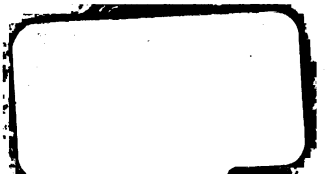

MEDICAL

AND

TOPOGRAPHICAL OBSERVATIONS

UPON THE

MEDITERRANEAN;

AND UPON

PORTUGAL, SPAIN, AND OTHER COUNTRIES.

BY G. R. B. HORNER, M.D., U.S.N.,

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WITH ENGRAVINGS.

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TO THOMAS HARRIS, M.D.,

U. S. NAVY.

SIR:

After maturely reflecting to whom the Dedication of this Work ought to be made, I have concluded that no person has a juster claim to it than yourself; and the friendship you have so often manifested for me, your high professional attainments, and the great estimation in which I hold your reputation as a physician, and your character as a citizen, have determined me to pay you this small tribute of regard and respect.

I am, respectfully,

Your obedient servant,

G. R. B. HORNER.

August 1, 1839.

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PREFACE.

In presenting these Observations to the public, it may be useful and proper to state that they were made during two cruises to the Mediterranean. The first cruise was performed in the corvette John Adams, during the years 1831, 1832, and 1833; the second in the frigate United States, during 1836, 1837, and 1838. As I have been, then, for so long a time in that classic sea, and the countries encompassing it, the reader may think it strange that my investigations have not been more extensive, and the information acquired is not greater; but these imperfections, I am sure, will be excused, when he is informed, that during the whole period I was trammeled with public duties, and had neither my own inclination nor pleasure to consult. It not unfrequently happened, that where the largest field for investigation was offered I had the least means of acquiring information; and, on the contrary, when nothing of interest was presented, the greatest facilities were possessed. It has often occurred to me, that, when in a region where innumerable objects worthy of the fullest attention were found, a rain, a storm, a quarantine, or some urgent duty detained me aboard, and caused disappointment. The reverse of this has happened: the ships were at places where the weather was fair, there was no quarantine, and my duties caused no detention nor obstacle; but where there was nothing deserving particular attention, or where already as much information had been elicited as was desired.

For the above reasons my Observations are diffuse with regard to some places; brief and restricted as to others: on one subject minute, on another general. But these remarks are chiefly in relation to the countries which I shall sketch, and not to professional subjects which came directly under my notice, aboard, and which will be treated of more fully; for, as a matter of course, every opportunity is presented to the surgeon in a ship-of-war of acquiring information with respect to any subject connected with his duties, and relating to the patients under his charge. Having the exclusive

management of the medical department, he can pursue uninterruptedly any plan of treatment, without consulting the will of his patients, or having to contend with prejudice and fashion; and he is not obliged to adopt modes of treatment better suited for acquiring popularity, than for ascertaining facts and improving his professional knowledge.

The plan proposed is, first, to treat of the Mediterranean in a general manner, and to speak of the diseases which were most common in the two vessels while cruising on its waters; and, lastly, to give the topographical and professional observations made on some of its principal islands and adjacent countries.

In undertaking a work which embraces so great a variety of subjects, I am aware of the difficulties to be overcome, and would be deterred from prosecutiug the task, were I not inspired by the hope of at least making known some facts deserving the attention of the reader, and of communicating information calculated especially to interest the members of my profession. Should it prove a failure, it is to be hoped that the reader will ascribe it to the impediments and difficulties above mentioned rather than to neglect: and should any inaccuracy be detected I trust that it will be attributed rather to erroneous impressions than to a disregard for what is correct, or to a desire of misleading.

G. R. B. H.

MEDICAL

AND

TOPOGRAPHICAL OBSERVATIONS,

ETC., ETC.

GENERAL OBSERVATIONS.

THE traveller having left behind him the mighty Atlantic and entered the Mediterranean, is at once struck with the difference between them. He finds himself transferred from a boundless, stormy, and agitated ocean, into a smooth and placid sea, encircled by many of the most beautiful countries of the world. Scarcely ever out of sight of land, he has always something to gratify the sight, excite pleasure, and remove the monotony of his voyage. At one time a craggy rock raises its head above the surface of the sea, and repelling the foaming water from its base, warns the watchful mariner to change his course; at another time a verdant, romantic island reminds him of its being the scene of some classic story. Here Stromboli disgorges a never failing stream of red hot lava, which slowly flows down her sides to be cooled in the hissing sea: there majestic Ætna elevates her snow-clad summit, and, obscuring the heavens with a dense, dark volume of smoke, shows that the Cyclopes still urge their Vulcanian tasks, and that the burning breath of Briareus is not as yet extinguished. Proceeding along the coast of Africa, he beholds the wild, rugged, undulating mountains of Morocco, and other Barbary states; he passes Ceuta, Algiers, Bona, Bizerta, and Utica; and, while thinking of the stoical and patriotic Cato, gets within sight of Carthage. But when he has reached it, he looks in vain for the temples, the palaces, the walls and towers of the former mistress of Africa, and sees only a miserable village, the broken arches of an aqueduct, and the solitary, half dilapidated tower in which Saint Louis, the pious king of France, terminated his glorious career and existence.

Having passed the bay of Tunis, doubled Cape Bon, a mountain looking at a distance like an island, he crosses the Gulf of Cabes, goes by Tripoli and her forest of date trees, decorating the adjacent desert of drifting sands, and he soon reaches Egypt. There he beholds the modern, rising upon the ruins of the ancient Alexandria; the needles of Cleopatra; Pompey's Pillar—those splendid remains of

antiquity—and the famous Nile, overflowing its banks to fertilize the neighbouring plains. After leaving Egypt he proceeds to Palestine, views its rich and lovely hills and valleys, the scenes of so many events celebrated in both profane and sacred history. There, likewise, are beheld with delight the distant sky-blue mountains of Carmel, stretching from north to south, beyond the plains of Jaffa; and the still more lofty chains of Lebanon and Anti-Lebanon, partly capped with snow, and hiding their towering heads amid the clouds. But suppose that, instead of taking the route along the coast of Africa, he chooses that by the coast of Europe, his pleasure will be increased rather than diminished. The uninterrupted chains of mountains, and intervening valleys, will afford innumerable prospects of the most captivating sort; every scene will be varied and imposing—the eye will never become fatigued, the mind never satiated; nor will the imagination cease to be excited; such is the host of interesting objects. Works of art are there mingled with those of nature, and the superfluities of one supply the deficiences of the other. With the wonders of ancient, he sees displayed those of modern times: and whether he be an amateur of the antique or the modern he will be unceasingly receiving instruction, mingled with amusement. Having seen the romantic and picturesque coast of Spain; admired the lofty, jagged, deeply serrated mountains of Grenada; having passed the barren ridges, the luxuriant, thickly populated vales of France, he next beholds the snowy summits of the southern Alps, then the more humble Appenines; and sailing on, along the coast of Italy, he passes Genoa, Leghorn, Rome, the former mistress of the world, and arrives in the Bay of Naples. On one side of this latter he witnesses the awful effects of the earthquake, which submerged beneath its waters half of the city of Baiæ, and left the other half in ruins; and, upon the other side, he views Vesuvius, emitting from her unextinguishable furnace volumes of black, curling smoke during the day, and vivid flames by night; and threatening, once more, to overwhelm with ashes and lava the delightful region around.

From Naples he proceeds along the iron bound mountainous coast of Calabria, enters the Straits of Messina; leaves the monster Scylla on the left, the foaming, whirling Charybdis on the right: he sails up the sea of Ionia, goes into the Adriatic, visits far-famed Venice, looks at the Tyrolese Alps, stretching their icy, dazzling white ridges from east to west; and then comes down along the mountainous shores of Dalmatia and Albania to the western coast of Greece. Having visited Corfu, Cephalonia, Zante, and other Ionian isles, he doubles Cape Saint Angelo, and becomes quickly involved among the countless Islands of the Archipelago.

Whether he be a theologian, historian, or physician, he will find himself surrounded by a multitude of the most attractive objects: in whatever direction his eyes are turned, they will most certainly rest on one which will call to mind some incident related in Scripture, or in mythology; some fact mentioned in the history of medicine, or in that of nations. On yonder isle, he will say to himself, were written the revelations; on this one were worshipped Diana

and Apollo; beneath that rugged promontory the Persian was defeated by the Grecian fleet; in this half deserted town the plague destroyed thousands of human beings; or on that gently sloping hill once stood the temple of Esculapius. In fine, let the traveller proceed in any direction, he will still be instructed, he will still continue to be delighted.

After this desultory introduction, I will now proceed with my observations; and the first subject on which I shall touch will be

THE CLIMATE OF THE MEDITERRANEAN.

From what has been said of the regions encompassing the Mediterranean, it is evident that its climate is materially modified by that of the former, and that it is not, as may be supposed, perfectly uniform. Its great extent also causes a considerable variation; for from the head of the Gulf of Cabes to that of the Gulf of Venice, it comprehends fifteen degrees of latitude, and from its easterly to its westerly extremity forty degrees of longitude. Besides its extent, its irregularity, occasioned by the vast bays and gulfs opening into it, especially those to the north, which have mountains, promontories, and peninsulas between them, necessarily exercises a strong influence upon, and occasions important differences in the climate. But these do not arise so much from the extent of the sea and its sinuosities as from the remarkable features of the surrounding countries, and the difference existing between the southern parts of Europe and the northern parts of Africa; particularly that portion to the eastward of Cape Bon. The lofty mountains bordering the European regions being more or less covered with snow and ice, have the air about their summits at a very low temperature, which from time to time descends to displace the heated air resting at their bases and on the surface of the water. This change in the relative position of the strata of the atmosphere, must of course cause frequent and sometimes very sudden vicissitudes in the temperature; especially from a higher to a lower degree. On the contrary, the vast, arid, and burning deserts of Africa, whose sands reflect every sunbeam, and absorb every particle of moisture, must occasion, whenever the wind blows across them to the sea, corresponding vicissitudes from a lower to a higher degree of temperature.

To show more accurately what this was, I subjoin an abstract of the register which was kept during the two cruises, with the exception of some months spent in cruising in different parts of the Atlantic. The variations in the temperature were found to be considerable in the same months of the different years, and were chiefly owing, as will be seen hereafter, when I treat of particular places, to the changes made by the vessels from place to place. This temperature, I should state, was taken at noon, below deck, and in the shade.

		Average.	Maximum.	Minimum.	Medium.
1831.					
	June	78	84	68	76
	July	$81\frac{26}{31}$	86	79	$82\frac{1}{2}$
	August	$78\frac{16}{31}$	83	76	$79\frac{1}{2}$
	September	$77\frac{22}{30}$	85	71	78
	October	$76\frac{7}{31}$	83	68	$75\frac{1}{2}$
	November	$62\frac{10}{30}$	69	48	$58\frac{1}{2}$
	December	$64\frac{1}{31}$	68	52	60
1832.					
	January	$62\frac{5}{31}$	66	56	61
	February	$61\frac{1}{29}$	66	54	60
	March	$62\frac{5}{31}$	68	51	$59\frac{1}{2}$
	April	$63\frac{10}{30}$	70	57	$63\frac{1}{2}$
	May	$74\frac{28}{31}$	77	70	$73\frac{1}{2}$
	June	$76\frac{3}{30}$	78	74	76
	July	Spent in the Atlantic, save three days.			
	August	$80\frac{24}{31}$	84	72	78
	September	$76\frac{3}{30}$	84	66	75
	October	$73\frac{30}{31}$	76	69	$72\frac{1}{2}$
	November	$60\frac{21}{30}$	74	67	$70\frac{1}{2}$
	December	$60\frac{10}{31}$	71	54	$62\frac{1}{2}$
1833.					
	January	$59\frac{4}{31}$	64	42	53
	February	59	64	52	58
	March	$53\frac{13}{31}$	62	40	51
	April	$63\frac{28}{30}$	68	54	61
	May	$69\frac{30}{31}$	75	62	$68\frac{1}{2}$
	June	$78\frac{22}{30}$	86	78	82
	July	$82\frac{28}{31}$	85	78	$81\frac{1}{2}$
	August	$83\frac{18}{31}$	96	80	88
	September	$78\frac{24}{30}$	83	75	79
	October	$75\frac{21}{31}$	77	61	69
1836.					
	July	$78\frac{7}{23}$	83	70	$76\frac{1}{2}$
	August	$77\frac{4}{31}$	82	74	78
	September	$78\frac{5}{30}$	80	76	78
	October	$69\frac{22}{31}$	76	47	$62\frac{1}{2}$
	November	$61\frac{6}{31}$	74	47	$60\frac{1}{2}$
	December	$62\frac{8}{31}$	72	57	$64\frac{1}{2}$
1837.					
	January	$54\frac{12}{31}$	66	37	$51\frac{1}{2}$
	February	$54\frac{21}{28}$	62	42	52
	March	$53\frac{26}{31}$	65	42	$53\frac{1}{2}$
	April	$60\frac{8}{30}$	62	43	$52\frac{1}{2}$
	May	$65\frac{2}{31}$	69	62	$65\frac{1}{2}$
	June, July, August	Were spent in the Atlantic, with the exception of four days.			
	September	$72\frac{14}{30}$	76	67	$71\frac{1}{2}$
	October	$66\frac{5}{30}$	75	65	70
	November	$59\frac{26}{30}$	70	52	59
	December	$60\frac{3}{31}$	65	52	$58\frac{1}{2}$
1838.					
	January, February, March	Spent in the Atlantic, with the exception of seventeen days.			
	April	$59\frac{28}{30}$	64	52	58
	May	64	72	50	61
	June	$71\frac{6}{30}$	79	70	$74\frac{1}{2}$
	July	$75\frac{15}{31}$	80	71	$75\frac{1}{2}$
	August	$76\frac{4}{31}$	83	73	78
	September	$72\frac{19}{31}$	81	67	79

From the above statement, respecting the temperature of the climate, it must be manifest to every one that it is not only temperate but moist; owing to the constant and great evaporation which, from one year's end to another, takes place from the surface of the sea by the heat of the incumbent atmosphere. But the humidity is displayed in different ways, according to the season of the year; for in summer it is imperceptible, in a great measure owing to its great diffusion, and it can be detected only by the heavy dews at night, by the injury done such substances as are most liable to suffer from moisture, or by the use of hygrometers. Rain at this season is very uncommon in every part of this sea, and an almost uninterrupted drought continues from the beginning of May until that of September. For instance; rain fell but once in the summer of 1831, not at all in that of 1832, three times in 1833, once in 1836, and five times in 1838.

But in winter completely the reverse happens; rain then falling very often, either in constant or interrupted showers, both during the day and night, but particularly in the latter. In the spring and autumn it occurs frequently and at intervals, or day after day, as in this country. As respects rain, therefore, at those seasons, there is nothing peculiar in the climate.

The most remarkable phenomenon accompanying the rains is the want of electricity, or at least of the exhibition of it; for neither during showers nor constant rains is it often seen, and thunder and lightning a re seldom witnessed. Thunder especially is uncommon. This indeed, is so very rare that, save at Smyrna and Alexandria, I never witnessed what may be properly called a thunder-storm—one attended with those terrible peals, and vivid flashes of lightning, which are so often met with in the United States. Another peculiarity respecting electricity is, that it is generally evolved in cold and not in warm weather; which is directly the reverse of what occurs in this country. In the winter, thunder and lightning in every part of the Mediterranean were more common than in summer; but these phenomena were oftener witnessed in the northern than in the southern parts, and in the most mountainous regions.

Before concluding the subject of humidity, it may be asked, to what should we attribute the dryness of the summer? This is a difficult question to answer, it being involved in uncertainty; but the most correct reply I think is, that it is owing, at least in a great measure, to the very great elevation of all the countries bordering upon the Mediterranean, with the exception of a portion of Africa; and likewise to the great height of most of the islands encircled by its waters; as that of Corsica, Sardinia, Candia, and other islands; particularly those to the eastward. The mountains, attracting the mists and clouds formed by the water evaporated, and retaining them, prevent their descent or diffusion over the sea, and necessarily hinder them from discharging the water contained in them, save about the mountains themselves. To this opinion may

be offered the objection, that the winter is as wet as the summer is damp, and that if the elevation of the coasts and islands have the effects stated during one season they should have similar ones during the other. This objection, however, I conceive has not much force, and may be easily set aside; for it is a well established fact, and one of common observation in every country, that the water which is evaporated during winter, not being combined with as much caloric as that evaporated in summer, never rises to so great a height in the atmosphere; and being suspended at a greater distance from the mountains it is therefore less under their influence, and is less attracted by them. This opinion, concerning the cause of the drought of summer, is also strengthened by the well known facts, that the greater the elevation of a mountain the more obscured in clouds it becomes; and that rain oftener falls upon mountains than upon plains.

Besides the peculiarities mentioned, there are others belonging to the climate: among the latter are the rareness of snow and hail, of water spouts, and meteoric appearances. Of these, the only ones I have observed were shooting stars. The *ignis fatuus*, and *aurora borealis* in no part of the sea did I ever witness; and the absence of the former may be ascribed with good reason to the height of the adjacent land and the small quantity of marshy ground. The mirage is sometimes seen; and I had once the pleasure of beholding about sunset the shadow of a vessel below the horizon perfectly depicted on the clouds intervening between her and the vessel in which I was sailing. But of all appearances the most peculiar are those of the clouds in warm weather, and particularly in the afternoon. They then become tinged with every colour which most gratifies the sight, and adorn the skies in the most fantastic manner; red, orange, yellow, blue, and all other colours, being mingled with the most exquisite beauty. The skies, also, are made still more lovely by the clouds assuming a variety of forms, as those of rocks, trees, men, beasts, and other animate and inanimate objects. These beautiful skies, however, are lost in a great measure in winter; for they then lose their rich colouring, are often obscured, dull, heavy, and diffused; and become even less handsome than those of the Atlantic.

Winds.—By much the most constant are the northerly, and especially the north-west, which blows along the whole of the south of Europe, from Gibraltar to Greece, for a much longer time than any other wind, and often for many weeks together; but it is more violent, and blows longest down the Gulf of Lyons, and upon the coast of Spain. This wind is also very constant in the Adriatic, and on the western coast of Greece, where it forms one of the winds called Etesian, of which there are two—the north-west, and the north-east—the former blowing on the western, and the latter on the eastern side of that country. These winds prevail in summer, and blow nearly the whole of it, generally for as much as forty days without cessation. In Greece they are preceded by

the winds called *prodramme*, or forerunning winds, which have a duration of ten days; and therefore the Etesian really continue uninterrupted for fifty days. With such constancy did the western Etesian blow last summer, that it took the United States seventeen days to get from Baireut to Suda in Candia, and twenty days to go from the latter place to Minorca. The eastern Etesian varies during the winter, and the winds then blow frequently from the south-east and south-west. Next to the northerly, the southerly winds are most prevalent. The chief varieties of these are the south-easterly and south-westerly. At the western part of the Mediterranean, the former are termed Levanters, and are remarkable for their dampness, the oppression in respiration which they occasion, and the mist, clouds, and rain, which accompany them.

At the eastern part, on the contrary they are called siroccos, are distinguished for their great dryness; and are accompanied with a clear atmosphere, save that it suspends an impalpable sand, which very slightly diminishes its transparency, and tinges the air of a very light yellow color. The best presages of this wind are a dead calm, and a perfectly smooth sea. The south wind, from being attended with the same phenomena, is likewise termed the sirocco; and I have known the south-west wind to be so hot and dry in the Archipelago, as to be equally as disagreeable as either of them. At noon, on the 20th of August 1833 at Milo, while this wind was blowing, the thermometer was at ninety-six degrees, and in the afternoon, when put in a windsail, exceeded a hundred. Its dryness, moreover, was so excessive, that it felt like the blast from a heated oven, and had the same effect on leather as exposure to a fire.

Besides these winds, there are others which prevail in particular parts; for instance, at Trieste the *borea*, or *bora*, blows at intervals with tremendous violence. This wind varies from east to north, occurs at different seasons, and lasts usually several days. Its fury is so great that the vessels there are frequently made to drag their anchors, or slip their cables and put to sea. At the Dardanelles, also, the north-east wind blows for a very great part of the year, and almost the whole summer, to the great injury of commerce by the detention of vessels bound up them. By a Greek pilot I was informed that he had been two months going through them to Constantinople. Conjoined with the current, which runs at the rate of from three to five miles an hour, this wind renders it utterly impossible for a ship of any size to get up the Dardanelles while it continues. The injury, however, to commerce, has of late been decreased by the introduction of steamers, which now ply up and down them regularly from Athens, Smyrna, and other places, and enable persons to get to Constantinople from either of those two cities in the course of thirty hours; a passage truly short, compared with that of a vessel impelled by sails, for which thirty days would be an average passage.

Tides.—In most parts of this sea they are so low as to escape observation, rising only a few inches; and when there is any agita-

tion of the water it is difficult to distinguish their ebbing or flowing. At Gibraltar the spring tide rises five feet between twelve and one o'clock; at the head of the Adriatic from one to four feet; and at Smyrna to the same height. The tide at the head of the Adriatic is said to be more perceptible than anywhere else in the Mediterranean, and with the wind from the south rises from five to six feet. At Venice, it is high water, at the full and change, at nine o'clock in the morning. The rise in the Adriatic, so much higher than about Minorca, and other western parts of the Mediterranean, show that the tides of this sea are not at all influenced, save near Gibraltar, by those of the Atlantic.

Currents.—There are a number of them in the Mediterranean, but the most important, and those which I shall notice, are the two great currents, the one running from the Black Sea through the Bosphorus, Sea of Marmora, and Dardanelles into its north-eastern part, and the other going in from the Atlantic through the Straits of Gibraltar. In addition to what I said of the former, I will only remark, that it continues until it becomes broken and diffused among the Islands of the Archipelago. The latter has the same rapidity as the other, generally running at the rate of from three to five miles an hour; but it is stated, that when the wind has been long and strongly blowing from the westward, it has been known to go as fast as seven miles. This current, entering through the middle of the Straits, dashes along by Cabreta Point, which forms the western side of the entrance to Gibraltar Bay, and sending a side current into the bay to perform its circuit, sweeps onward by Europa Point, the southern end of the rock of Gibraltar, and keeps on directly up the Mediterranean, to be gradually lost along the coast of Spain.

But, notwithstanding it has been said that this current is running constantly and invariably, yet there is the best testimony to prove that at times it has been wanting, and that instead of its setting into the Mediterranean, another current has been found running from this sea into the Atlantic. Several English captains of the navy were witesses of this fact, and of vessels having been carried by it without the Straits. Captain Malling says he can bear testimony that he saw the current running out of them with much greater velocity than he ever found it running into the Mediterranean; and Captain Livingston, in 1822, observed the general current to be running westwardly instead of eastwardly, for some hours, completely across the Straits, at the same time that vessels were drifted from abreast of Tarifa, nearly as far out as Cape Spartel.

That counter currents exist on the borders of the general one is a well-known fact, and a matter of common observation; vessels going out of the Straits often taking advantage of them. One counter current runs along the coast of Spain, from near Malaga, westward to Gibraltar, and thence outward to Cape Trafalgar. The other one runs along the coast of Africa until it reaches Cape Spartel, and is there lost in the Atlantic.

It is believed and asserted that an under current exists, and runs

beneath the surface of the upper, in a direction opposite to that going in from the Atlantic. The chief facts advanced for proving the correctness of this assertion are the following: A ship at anchor at Tarifa, found a current running outwards at the rate of five and a half miles; another vessel at anchor under Cape Spartel, was obliged, from the existence of a similar current, to have a man at the wheel for steering her. In 1820, Captain Barret states, that when he was off Tangier Bay he found an under current to be drifting his vessel westward for three hours, while the usual current was going eastward. The Phœnix of Marseilles, in 1712, gave chace to a Dutch vessel near Ceuta, and overtaking her in the middle of the Straits between Tarifa and Tangier, fired a broadside into and sunk her. A few days afterwards the sunken vessel made her appearance on the shore near Tangier, which is four leagues to the westward of the place where she went down, and in an opposite direction to the course of the general current. Lastly, a vessel some years ago was lost at Ceuta, and afterwards thrown up on the European shore at Tarifa, which is seventeen miles distant.

These facts certainly tend to prove the existence of an under current, but they are far from being conclusive; for all the circumstances stated might have been, and most probably were caused by the counter currents first mentioned, or by the western current having ceased and the eastern having set outwards. The fact that a vessel was drifted to the west while the current was thought to be going to the east, may be rationally explained by a familiar observation, viz., that whenever a vessel is moving in one direction the water appears to be going in another diametrically opposite, and that the rapidity of the latter seems to be in a precise ratio to the former. It is true, there is a difference between a vessel floating down with a current and one impelled by wind or steam, and that the water will have more the appearance of receding from the latter than the former; but, nevertheless, it will seem to recede to a certain degree, and sufficiently to cause deception.

That vessels anchored or not at Tarifa, Tangier, or any other part of the two shores, find a current which sets outwards is probable, and indeed proved by many persons; but such may be the case and yet an under current not exist. On the contrary, this serves still further to prove that there is none, and that the surplus water of the Mediterranean has other means of making its escape. The two sunken vessels having floated outwards is the best evidence advanced; but even this fact may be as well accounted for by supposing they were carried out at night by an eastern and general current as by saying that it was the effect of an under current; and it is strange that persons should thus set aside a well known fact in favour of a conclusion deduced from mere supposition.

No positive proof then is given respecting an under current, and no accurate means of ascertaining its existence have been devised, though it is possible that this might be done by letting down a

body of much greater specific gravity than water, by a line attached to a vessel anchored in the middle of the Straits. But even this experiment would be attended with great uncertainty, as the body let down, though an under current should exist, would, when sinking, first be drifted to the eastward by the upper, and then to the westward by the under current. Of course the effect of the latter would be counteracted by the former, and the body would strike the bottom in the very spot where it would have done if no current existed, unless the one or the other should be either the deepest or strongest.

As to the explanation given by those who believe in the existence of an under current being caused by the water of the Mediterranean containing more saline matter than that of the Atlantic, I will merely remark that it is as yet theoretical, since no decided proof has been given that such is the case. It appears to be founded on the supposition, that the western current running in from the Atlantic is owing to the very great evaporation from the Mediterranean, causing its surface to fall below the level of that of the ocean. If this evaporation is really so much greater than that in the Atlantic, and the rivers emptying into the ocean are so much larger in proportion than those emptying into the Sea, the water of the latter would certainly be salter and heavier. But, although there may be a disproportion between the rivers, a greater proportionable evaporation in the sea is improbable; certainly so in that portion of the ocean embraced within the same latitudes, and between the tropics, where the Sun possesses much more power, and must necessarily occasion greater evaporation than where it has less power. To what, then, ought we attribute the current going in from the Atlantic? This is not an easy question to answer; but the most correct opinion, I think, is, that it is owing to a number of causes, the principal of which are, the disproportion between the quantity of water evaporated from the Mediterranean, and that discharged into it; the peculiar form of the entrance to the Straits, which somewhat resembles a funnel, and acts as a conductor—the impulse given to the waters of the Atlantic near them by the Gulf Stream, which sweeps across the ocean to be lost on the Coast of Africa; and the prevalence of westerly winds, which have been known when violent and long-continued to almost double the usual rapidity of the current.

DISEASES INCIDENTAL TO THE CREWS OF VESSELS CRUISING IN THE MEDITERRANEAN.

In treating of this subject I shall only speak of the diseases which have come under my own observation. The first which will engage our attention are those of the pulmonary apparatus.

From what has been said respecting the climate, it is apparent that these are not of rare occurrence, and especially during the

winter, when such vicissitudes of weather occur, and so much rain falls, that all persons predisposed to them are sure to be more or less prejudiced. However, their occurrence depends much on the parts where the vessels may be cruising; a great difference, as already stated, existing between the climate of the northern and southern portions of the sea, or between that on the coast of Africa and that on the coast of Europe.

The pulmonary diseases met with were of every kind; viz., *pleurisy, pneumonia, bronchitis, asthma, phthisis*, &c. During the last cruise, the number of cases of phthisis was very great, no less than eight of the men, and two of the officers having died of it, either on board the ship or on shore; save one of the latter, who died while returning home in another vessel. This number of deaths from phthisis was much disproportioned to that from other complaints, and although three of them originated in the United States; nevertheless, it serves to prove, that, notwithstanding the climate of the Mediterranean is celebrated for its mildness, and suitableness to consumptive persons, it is not as beneficial to them as is represented, and that not only they, but the well, should not think that while living in it they are out of danger, and will enjoy an exemption from this disease. Indeed, the climate, so far from being thought adapted to such patients, is believed by some persons to be decidedly injurious, and instead of putting a stop to the disease to hurry on its progress to a fatal termination.*

Whether this belief is well founded is not positively proved; but it is certain that, from the dampness of the atmosphere during cold weather, there is a strong tendency in scrofulous individuals to *glandular enlargements*, both externally and internally; and we, therefore, may correctly infer that patients affected with tubercular consumption must be more injured than benefited by the climate. The glands most commonly enlarged are those of the neck and groins, particularly the latter, which appear in the shape of buboes, and are apt to be confounded with those arising from syphilis. These enlargements are at first indolent, then increase quite rapidly, become painful, attain considerable size, and suppurate or remain enlarged for an indefinite period. From syphilitic buboes they may be distinguished by their appearing mostly during cold and damp weather; arising without the persons having them being exposed to the causes of the former complaints; by their being unpreceded by chancres; being unattended, or not followed by ulceration of the fauces; and being oftentimes composed of several glands, forming flattened instead of hemispherical tumours.

One of the most difficult cases to cure was situated in the left arm-pit; it became fistulous, and was under treatment for more than three months.

These enlarged glands are found in persons of all ages, in those of weakly and robust forms; but most usually in persons of

* See Appendix, A.

scrofulous diathesis. In one of the latter, who died of tubercular consumption, the glands of the neck were swelled, and three of the mesenteric so enlarged as to weigh about as many ounces.

Suppuration was the usual termination when emollient applications were made, and sometimes this occurred spontaneously before the patients were admitted on the sick list, or after the glands had been so much reduced in size as to have allowed the persons to return to duty. Cases of this kind happened, although every means had been taken to discuss the swellings or to cause them to suppurate, and were attributed to the persons affected, when on duty having a full diet, drinking their allowance of grog, and producing irritation in the glands by the active exercise taken whilst engaged in their ordinary occupations.

Treatment.—This varied according to the nature of the cases. In most of them topical applications, such as leeches, blisters, iodine ointment, and especially warm linseed poultices, were employed. The last named articles generally caused suppuration, and were not resorted to, commonly, until the other articles had failed in discussing the tumours. The former plan of cure was the most certain and quickest; it being an easy matter, in most cases after suppuration had been excited—the abscesses opened, to heal up the parts by continuing the poulticing until inflammation had been entirely subdued; and then using mild lotions, such as a solution of nitrate of silver, sulphate of copper, or sulphate of zinc: now and then it was necessary to use the former medicine in its pure state to remove fungous or callous edges. Blisters were often effectual; but were objectionable from the pain caused by them, and the skin being indurated and much thickened by their repeated application. When these and other articles failed in completely removing the swellings, soap plaster, and compression by a hard pad fastened on by bandages, were found efficacious; and, in some instances, where simple poultices were not able to excite suppuration, camphorated ones succeeded perfectly.

These topical remedies not being as effectual as desired, the iodide of potash in solution, cathartics, the Lisbon and other diet drinks, sea bathing, and other constitutional remedies, were employed. Among the latter, the corrosive sublimate was used most efficaciously in the diet drinks. It was given in very minute quantities, generally in the proportion of a grain to a quart, so that it had only an alterative effect. In like manner the blue pill was administered. These methods of treatment, aided by an observance of regimen and other adjuvants, were successful, except in a few cases: but were not as much so during cold and damp as in warm and dry weather. Moreover, in the former, relapses were liable to take place, and during the latter, cures were effected with much more facility; the remedies acting with greater efficacy, the swellings more quickly subsiding, and the ulcerations healing more rapidly.

The diseases which I shall next notice are *hepatitis* and *icterus*. Both of these were frequently met with among the seamen, especially

those of the most intemperate habits, and during warm weather. Jaundice occurred either alone or in connexion with the other affection; it was sometimes mild, at other times severe, and required active treatment, being accompanied with febrile symptoms. One case terminated fatally; the patient having suffered extremely from head-ache, followed by delirium and inflammation of the brain. This case originated in the Mediterranean, but the patient did not die until the vessel had nearly crossed the Atlantic on her return home.

Of the treatment of these complaints I have nothing more to say, than that it was such as is every where found to be the most efficacious; consisting chiefly of depletion in its primary, and of mercurial medicines, given, for the most part in alterative doses, during their secondary stage.

Ophthalmia was a common affection, but most of the cases treated were easy of cure; none of them being of the purulent kind, or such as occur so often in the surrounding countries, and especially on the coast of Africa.

Bowel affections—*diarrhœa, dysentery, enteritis,* and *cholera*—were numerous.

The two first diseases were mostly caused by bad water, and excess in eating fruits and vegetables after a long abstinence from them, and the crews had been living for some time principally on salt provisions. Ordinary cholera was often occasioned by the same excesses, but it was most apt to happen from eating largely of crude, acid fruits during hot weather. *Asiatic cholera* has, from time to time, occurred in our ships of war since its introduction into the Mediterranean, which happened at the close of the year 1831; having gradually worked its way from Russia down the western coast of the Black Sea to Constantinople, and thence down the sea of Marmora and the Dardanelles to the eastern coast of Turkey in Asia. This disease did not become prevalent until several years after its first appearance, and has never pervaded the whole of the islands, nor all of the countries encircling this sea, at the same period; but has gone from island to island, from country to country, without observing regularity; attacking sometimes one place, at other times another; skipping over a part one year and devastating it the following. Sicily is the last island, Italy the last country, in which I have heard of its ravages. In Palermo alone, it is said, it destroyed twenty thousand persons. Several of our ships of war have had it aboard: the John Adams was the first, the Shark the last, vessel in which it occurred. It appeared in the former in the summer of 1831, at Constantinople; in the latter at Trieste, in that of 1836. As there are some facts connected with its occurrence in these vessels which are of importance, from their being calculated to throw additional light upon the cause of this disease, it may be well to communicate them.

The John Adams having arrived at Constantinople on the tenth of August, anchored in the Sea of Marmora below the seraglio,

at a few cables' length from the city. Having been refused permission to go above the seraglio, and anchor in the Bosphorus at the mouth of the harbour, which is on the north side of the city, she remained where she was until her departure. As soon as she arrived we heard of the cholera being there, but that only a few cases were occurring daily. The people were found pursuing their ordinary occupations without the least appearance of alarm, and therefore none being excited on our part, save in a few individuals, the officers began, and kept up, the freest communication; no part of the city or its vicinity being left unexplored by them. Of the men, only the boatmen and some others were allowed to go ashore. From the tenth to the twentieth of August, the wind blew uninterruptedly from the north-east, the weather was fair, and the thermometer at noon averaged seventy-six degrees. On the twentieth and twenty-first the wind became light; on the twenty-second it died away; a dead calm succeeded; the air was misty, the temperature rose to eighty-three degrees, the sun was shorn of its rays and assumed a pearly aspect; every person aboard was complaining of languor, and unusual oppression. On the twenty-third, the wind arose, the thermometer fell to seventy-eight degrees by noon, and to seventy degrees by night, and the weather again became pleasant. Before day-break on that day the two first cases of cholera took place, terminated in death the following night, and were succeeded in quick succession by many other cases, so that the crew being filled with them the ship was obliged to hasten away from the infected place, proceed to the Gulf of Smyrna, land all the sick on Long Island, or the greater Dourlack, and remain until the disease had run its course.

After its subsidence, and when time was allowed me to investigate its character, by inquiring into its nature, and reflecting on its causes, I came to the conclusion that it did not arise from contagion, but from some unknown constitution of the atmosphere, rendered more noxious and active by the changes in the weather of which I have just spoken. My opinion was based on the following facts:

No person belonging to the vessel was near, or saw any inhabitant of Constantinople or of its vicinity who was, or to the best of my knowledge had been affected with the disease. The officers were the first who went ashore, wandering through the streets, the bazaars, and other places; they mingled with crowds, formed of every class of the people, but chiefly of the lowest; which, as everywhere else, had suffered most from the disorder, and they yet were the last persons aboard who took it, and they were affected in the mildest manner. Their servants and the boatmen, who were similarly exposed, in like manner escaped with a few exceptions. Again, while the ship was at Long Island, the launch, with a crew of seventeen men, one of whom died of cholera, was sent frequently to Vourla for water, and though they without restraint associated with the people assembled there about the fountain, or crowding a grocery shop near it; nevertheless none of these

latter were infected with the disease. Lastly, many persons of both sexes, and both young and old, belonging to the adjacent country, frequently visited the island on business or to gratify their curiosity. Some of them came near, others walked through the ancient reservoir where all the sick were placed, and notwithstanding they were so exposed to infection, none of them contracted the disorder, nor communicated it to their friends and neighbours when they returned home.

This opinion, with respect to the primary cause of cholera, has been more confirmed by what I have seen of it in this country, but particularly by what I learned regarding its occurrence in the Shark. Though I was not in that vessel at the time, yet from being one of three surgeons appointed by the commander of the squadron to inquire into the origin and character of the disease, I became possessed of all the important facts relating to these points. They were as follows. The vessel having arrived at Trieste, and having found the cholera prevailing there, was immediately put in quarantine. It having been recommended by the surgeon to keep her out of the place where quarantined vessels usually anchor, she continued where she was, and about a quarter of a mile from the city, holding no communication with it whatever. No one belonging to the vessel was allowed to go into the place; and none of its citizens, nor other persons, were permitted to come on board of her. When she arrived, the wind was blowing from the north-west, across the head of the Adriatic, the weather was fair, and the disease was carrying off in the city five persons a day. Two or three days after her arrival the wind shifted to the north-east, and the weather became damp and chilly. The day after the change in the weather eighty deaths from cholera were reported, and the following day one hundred and forty in the city.

In spite of the precautions taken, the disease, in about a week after she arrived, broke out among her crew, and forced her to flee from the place down the Adriatic. Seventeen cases occurred, and three persons died, and all within eighteen days; at the expiration of which time the disease disappeared, no more cases taking place. These are the facts relative to the manner in which the disorder appeared aboard this vessel; and what happened afterwards also is further evidence of the non-contagiousness of Cholera. Having left the Adriatic she proceeded to the Levant, joined the squadron at Jaffa, and communicated with the other vessels and with that town, and some, if not all her officers went up to Jerusalem. Notwithstanding every opportunity was offered for the disease spreading by contagion, yet it neither did so in the squadron nor in the country. Other facts might be adduced to substantiate the opinion expressed respecting the origin of this complaint, but as it was solely my intention to make known such of them as have came under my own observation, and it is not my wish to engage in an elaborate discussion of the subject in which so many arguments of a contrary kind might be advanced, I will here

leave it, and proceed to the consideration of another disease of no less importance; I mean the

SMALL-POX.

This curse and scourge of the human family is met with in all parts of the Mediterranean, but especially in the eastern extremity, where vaccination is either neglected, or is performed imperfectly. It has often broken out in our ships of war, and it occurred twice in the United States while on her last cruise. She got it aboard the first time at Alexandria, in the fall of 1836, and the second time at Smyrna the following winter. In the first instance, a case of varioloid, induced by exposure to several persons recently affected with small-pox, occasioned one of this disease, which fortunately did not spread farther, from the person having been immediately sent out of the ship. In the second instance, the first case was one of confluent small-pox, and from that cases of every variety originated. The crew thus became infected twice, although, of my own accord, and agreeably to an order from the Navy Department, I had most carefully vaccinated the whole of them, with the exception of a few who did not require protection, from having had the disease, or having genuine scars of vaccination. The matter used was obtained from the vaccine institution at New York, was introduced into two punctures in the most careful manner, and yet did not cause a single genuine pustule on any one, whether he had or had not been previously inoculated or vaccinated.

How then to account for this general failure I was at a loss, and did not know to what to ascribe it; whether to the impurity of the matter, the imperfection of the operation, or to some peculiarity in the constitutions of seamen.

Of the same want of success in vaccinating I have heard several medical officers of the navy complain, and from what I have seen and learned from others, one might incline to believe that persons who have attained the age of manhood, and especially those who are advanced in life, lead hardy lives, and subsist on the coarsest food, lose their susceptibility to infection from the vaccine virus; and of course are more difficult to protect from small-pox. Should this be the case, it shows the very great importance of vaccination in youth, and particularly of individuals designed for service in the navy, who if left unprotected are not only liable to suffer from small-pox themselves, but when getting it to contaminate all about them who are not protected, and thus cause both individuals and the public service to suffer. The proper mode of vaccination, therefore, is a subject of deep interest. It concerns the welfare of all mankind, but more particularly that of seamen and soldiers, who being collected together in large numbers, and crowded in such a manner that if any contagious disorder attacks one of them it is almost sure to spread and infect all who are susceptible.* Certainly, as respects our ships of war, instances of this kind have frequently

* See Appendix, B.

happened; and sometimes they have been rendered so totally inefficient by the small-pox getting aboard them, that they have been unfited for the service required of them either in time of peace or of war.

The Macedonian, the ship in which I first saw service, was in this condition when returning from her cruise on the coast of Brazil, in the fall of 1828; and one of our corvettes, some years afterwards, I understood, having been despatched from that country to the Coast of Africa, was forced from the same cause to put back to Rio Janeiro, where the disease had been first received.

Other such incidents as these might be cited, and they have so often come to the knowledge of our government, that orders for the vaccination of the crews of our men of war have been repeatedly issued; but thus far it has been of little use, and it appears that to render it efficient some better method of performing it must be adopted. What this method shall be I leave to some member of the profession more able than myself to discover and to recommend.

A few cases of other exanthematous complaints occurred. These were cases of *miliaria, urticaria,* and *pemphigus*; which were almost exclusively confined to warm weather. *Erysipelas* was very rare, but with *herpes* a number of persons were affected, and several in an obstinate manner. The worst of these cases, however, originated elsewhere, and merely seemed to be aggravated by the warmth of the climate; though by far the most severe was one in which nearly the whole skin on the back was affected: it was much worse during the winter, and was completely cured in the summer,—the perspiration at this time evidently having a beneficial effect.

Ulcers, abscesses, phlegmons, and *tumours,* were common; but not having been marked by any peculiarities they do not deserve to be spoken of at large. The ulcers were generally upon the lower extremities, and the consequence of excesses ashore, neglected wounds and contusions, and varicose veins. The abscesses were in various parts of the body; sometimes in the loins, at other times in the perinæum or wherever the cellular tissue is most abundant. The largest, and by much the most difficult one to cure, was situated about the left hip, extending from the loins to the thigh, and followed a chronic rheumatic affection.

Paronychia frequently occurred in both ships; but this, I long since observed, is a complaint to which seamen are as much subject as seamstresses; and this may be, I think, most properly ascribed to the great use they make of their hands, and to keeping the fingers constantly irritated by pitch, tar, sewing canvas, hauling ropes, and other manual labour.

Hydrocele, circocele, and *hernia,* were likewise met with, but not often. Of the three the last named was most frequently seen; but it did not occur as much from the relaxation produced by long continuance in a warm climate as by falls and other accidents. Of

hydrocele only two cases occurred; one in each vessel. Both of them were radically cured by simply laying open the sack, discharging its contents, putting a pledget of lint over the wound, and then applying an ordinary dressing. Each case got well within a few days under this treatment, and without my doing any thing else to excite adhesion within the sack other than applying the lint.

Neuralgia was a common affection at certain times, and usually seemed to be owing to miasmata, it being frequently paroxysmal, attended with febrile symptoms, and yielding to tonic remedies.

In addition to the complaints enumerated, many more of greater or less importance are incidental to the crews of vessels sailing about the Mediterranean, and among them are rheumatism and plague; but as the first is a disease prevailing every where, and the second never came immediately under my notice, and will be spoken of when I come to write of the countries in which it prevails, I will say nothing more of them at this time, but will go on to speak of

FEVERS.

These form the most important class of diseases to which persons cruising in this Sea are subject during warm weather, and particularly at the close of summer and the beginning of autumn. The fevers with which I had oftenest to contend were intermittents and remittents. The former were generally of the tertian type, and easily cured; but their degree of obstinacy depended chiefly on their duration; and on their being old cases renewed by exposure to cold and dampness; or on their having been caused by malaria in the places visited by the ships. From this difference in the causes proceeded that between the cases in the two ships. Most of those in the John Adams, having originated principally from malaria, were more severe and more numerous in proportion to her crew; whereas, the cases in the United States having been chiefly old ones, renewed by exposure to the former causes, were comparatively few, and of a mild character, quickly yielding to the remedies employed.

Enlargements, and other affections of the liver and spleen, rarely followed the cases in either vessel; and this may be correctly attributed to the salubrity of the sea air, and the patients not continuing long in the atmosphere in which the disorder was contracted. Among all the cases only one proved fatal, and that was of a delicate, over-grown youth, who had had the disease in Minorca, his native place, and who having shipped before he had entirely recruited from a recent attack, and never having been before on a cruise, suffered extremely from sea sickness. Becoming much prostrated he sunk into a typhoid state, and had the fever in the most irregular form: he was landed and put under the care of a physician at Port Mahon, and there died.

This case was a striking example of the injurious effects of sea sickness upon the stomach, and of the perfect torpidity it is

capable of causing in the brain. While he was aboard we were going from place to place, and he was better or worse accordingly as the ship was at sea or in port, and in proportion to the agitation occasioned by the wind and water. When in port he became better, and seemed in a way to recover; but as soon as he got to sea, and the vessel was uneasy, he sank into a typhoid condition, and we lost all hopes of his being cured. Like instances of the great injury done to the nervous system by the agitation of a vessel at sea might be mentioned, but the relation of this case will be a sufficient warning to persons subject to intermittent fever, and debilitated by it or any other affection, not to expose themselves incautiously to sea sickness, which is not as deserving of ridicule and laughter as is generally thought, nor as beneficial as some believe.

Remittent fever occurred in both vessels, but most frequently in the John Adams, from her being longest at places where its causes predominate, that is, in the eastern portion of the Mediterranean. This fever prevailed mostly in August and September 1833, while she was cruising in the Archipelago and engaged in convoying American vessels on their passage from Smyrna. Of the causes of the prevalence of the disease there I shall speak more at large when treating of that place.

Cases also happened in the United States both there and in the Levant. In both ships the ordinary symptoms were, severe headache, pain in the loins, and along the course of the spine; a hot, dry sallow skin; high coloured urine; a thickly furred tongue; injected eyes; great sensibility of the epigastrium; a full, strong, and rapid pulse; intense thirst; at first costiveness, and, after taking cathartics, bilious stools. In the worst cases these symptoms were aggravated: there was pain in the right hypochondrium; the abdomen was tense, hard, tumid, and tender; the pulse extremely frequent; the urine as dark as French brandy; the eyes were jaundiced; the tongue at first was covered with a yellow, then with a brown fur; the skin became of a saffron colour; the stomach rejected food and medicines; and sordes collected about the teeth. Before dissolution, hiccup, fœtid urine, insensibility, &c., occurred.

From what I remarked in some of the last cases which came under treatment, I thought that this disease had a tendency to observe critical periods. Certain it is, that in several of them the fever went off on the third and fifth day, and in one case it subsided completely on the fifth, then came on again as violently as ever, and terminated in death on the seventh day.

Autopsia.—This corresponded with the symptoms. The stomach and intestines were found more or less inflamed, the liver engorged and changed in structure, and the gall bladder filled with black, tenacious bile. Of the intestines, the duodenum was most affected —its lining being both much inflamed and thickened. In one person the liver was blanched and indurated, and had its *pori biliarii* obliterated in a great measure; the spleen was double its natural size and softened; the kidneys were enlarged, and changed in

structure. But this person having been a hard drinker, I attribute these appearances chiefly to that circumstance. Other marks of disease indicated by the symptoms were discovered, but the principal were the first mentioned, which clearly proved that the parts most affected were the liver and the alimentary canal.

Treatment.—Slight attacks of this fever readily yielded to mild cathartics—of which the sulphate of magnesia was most used in combination with tartar emetic—and to diaphoretics. The principal of these given were the acetate of ammonia, the nitrous powders, and tartar emetic, in solution with water, or united with the former medicine. This last combination I much preferred, having found it most certain to agree with the stomach, to produce perspiration, and diminish the fever. The common dose was a half ounce of the acetate of ammonia with one-eighth of a grain of the tartar emetic every hour. These medicines were aided by cool acidulated drinks, hot pediluvia, and sponging with cold water, which always afforded great relief to the patient. In severe cases the treatment was much more active; venesection was freely employed; leeches were applied to the epigastrium, cups to the seats of pain; opiates were given to soothe irritability of the stomach, and to procure sleep; and calomel in moderate doses, the blue mass, the diaphoretics mentioned, and other medicines, were administered.

Blisters in the last stage, and after the subsidence of the fever, were now and then applied. Emetics and tonics were very rarely required, and seldom prescribed; the first, only where the stomach was loaded with ingesta and much deranged; the second, where the fever had subsided, the stomach was not irritable, and the patient was considerably exhausted.

The tonic most used was the sulphate of quinine, in solution with the elixir of vitriol, gum arabic, and loaf sugar. This was the most agreeable and efficacious remedy of the kind—rapidly restoring strength, and hastening convalescence. In aid of this, in order to clean the tongue, gently evacuate the bowels, and restore the liver to the proper performance of its functions, the blue pill, in the quantity of five grains, once, twice, or thrice a day, was prescribed, and found to be highly beneficial.

I here terminate what I have to say of the principal fevers which occurred in the two vessels. Besides these none worthy of notice were met with either in them or in others of the squadron: neither scarlet, nor yellow, nor typhous fever, were seen aboard of them nor ashore. These fevers may occur, but it must be very seldom; for if they were common some knowledge of their existence would have been obtained. The climate of the Mediterranean being temperate, never being extremely cold nor hot, at least for a protracted period, seems incapable of producing either yellow or typhous fever aboard ship. The heat is not great enough, nor long enough continued to generate the miasmata in vessels which cause the former disease, nor is the cold so intense as to produce the latter by prostrating the vital powers, causing personal cleanliness to be neglected, ventila-

tion to be discontinued, the pure air to be excluded, and the impure within to become still more charged with the noxious vapors pervading every ship, and with the poisonous effluvia arising from the bodies of the crew. But the exemption from these complaints may be ascribed, in part, to the great attention paid to keeping the holds and all other parts of the vessels perfectly clean, to thorough ventilation by wind-sails, and by opening the ports and hatches, both when the vessels are in port, and likewise when at at sea should the weather permit, and finally to purification by the free use of the cloride of lime and other disinfecting substances.

With the preceding account of fevers, I close my notices of the diseases which, according to my observation, are incidental to vessels of war cruising in the Mediterranean. Many more occur aboard them, but those mentioned I believe to be the most general. Others might be spoken of, but as they are seen in vessels cruising in all parts of the world, had little or nothing remarkable in their symptoms or treatment, I will here end what I have to communicate regarding the general observations made by me in the Mediterranean.

SPECIAL OBSERVATIONS UPON THE MEDITERRANEAN, AND UPON PORTUGAL, SPAIN, AND OTHER COUNTRIES.

Having finished such general remarks as I had to make concerning the Mediterranean itself, I will now proceed to communicate the information acquired in relation to some of the countries adjacent to and bordering upon that sea, and respecting some of its numerous islands.

The first country of which I shall speak is Portugal, which, although it does not border upon the Mediterranean, yet from its contiguity and general sameness of climate and productions with Spain, it may, I think, be treated of in this work without impropriety. My remarks, however, will be confined, in a great measure, to its capital, and the neighbouring parts, for I was not long enough in the country to pursue my investigations respecting it as far as was desired, or to warrant my undertaking to treat of its typography in a general manner. Therefore, concerning its climate, botany, mineralogy, zoology, &c., I shall say nothing, save, that in writing of its capital, of necessity, I cannot avoid touching on some of these subjects.

Though the stranger, when he has reached the coast of Portugal is not surprised with magnificent prospects, yet, when he is entering the Tagus, and about having the first view of Lisbon, he has many objects presented which will excite interest and pleasure. Before him is seen the current of the river, contending for mastery with

the tide of the ocean, and forming a rampart of foaming surf, extending from shore to shore. To the right are the distant mountain of Monchique, hiding its summit among the clouds; and the high, precipitous promontory over-looking the bay of St. Ubes, on the south; and the wide extensive beach of white, glittering sand on the north; and to the left are the castle of St. Julian, innumerable villas, cottages, and finely cultivated farms spreading over the hills and valleys; and towering above all, the famous convent of Signora de la Penna, standing on the highest peak of the mountain, called the rock of Lisbon, or Cintra.

When he has entered the river, and is proceeding towards the city, his pleasure will not be diminished; for the scenery on each bank is not less lovely than what he has just beheld. On the right bank are a range of lofty, undulating hills, forming, next the river, precipices of immense height; clothed with the richest verdure, and crowned with villages, towers, and castles, displaying their banners, and with their pointed, well trained cannon warning all hostile vessels to keep aloof. Upon the left bank are a range of hills similar to those of the other, but not so precipitous, and covered with a host of four winged wind-mills, groves of olives—and the vast city itself, with its countless churches, convents, palaces, and other public edifices, extending as far up the river as the sight can reach.

Below the city the river is not over two miles wide at any part, but opposite to its eastern extremity it is about four miles, where it expands itself suddenly into a vast harbour, but with a corresponding loss in its depth—large vessels always anchoring on the northern side, and in the channel.

All the country about Lisbon partakes of the character of that forming the banks of the river, being uniformly hilly; but though well tilled, the land is not as productive some miles back of the city as near it, the soil being thinner and poorer, and yielding little more than long bearded wheat of very low growth; the best of it not exceeding two feet in height. However, it grows quite thickly, and having large heads bears a much greater quantity of grain than it seems capable of doing on making a superficial examination.

Besides wheat the other products of the soil are rye, barley, Indian corn, pulse, oats, and a great many plants—as the common aloes, the *cactus opuntia*, wild poppy, and jessamine; but none, with which I met, possessed decidedly medicinal properties. Olives, grapes, oranges, and lemons, are the principal fruits. Of trees the most common are the poplar, cork, elm, and chestnut. The first named is found chiefly in low grounds, the three last about the mountain of Cintra, where they are not only seen ornamenting the paths and roads winding around it, but growing spontaneously upon its sides. In and around the village of Cintra the chief vegetable productions mentioned are found most abundant; for there both nature and art have done almost every thing to render

it a delightful abode, either for those who are in the enjoyment of health or who are afflicted with disease. In fact, Cintra so far exceeds in attractions any other summer retreat in the neighbourhood of Lisbon, that it is almost the only one mentioned or frequented; and no other is considered either agreeable, genteel, or fashionable, by the nobility, gentry, or commonalty. There, as soon as the gaiety of the city is terminated, the wealthy flock to enjoy tranquillity, and to recover their lost health and strength—and there those in moderate circumstances resort, from time to time, during hot weather to escape the noise, bustle, and heat of the city, and remain free of care and labour until business bids them return.

The mountain of Cintra is several miles in length from east to west, and is from twenty-five hundred to three thousand feet high. Its loftiest parts are composed of vast rocks and heaps of granite, of a dark grey colour, great hardness, and often of a cuboidal shape; being separated by vertical and horizontal fissures, after the manner of lava, when it has become cooled and lost its fluidity. On the top of the mountain scarcely any other plant is seen than a species of large fern, filling up the intervals of the rocks, covering every part on which there is the least earth, and even growing upon the bark of the cork trees. Their bark, becoming very rough and thick by age, moulders a little, and being capable of holding such dust and moisture as may fall upon it, affords sufficient nutriment for the fern to take root and live. The lower parts of the mountain are formed of rock and earth, which being cultivated in the best manner, screened by the shade of the trees, and irrigated by the numerous rills flowing in every direction to supply the fountains, aqueducts, and basins distributed around the mountain, produces most abundantly. It is thus that so strong a contrast exists between the upper and lower parts of the mountain; on the former little else than barren rocks, surmounted by the convent of Senora de la Penna, and the ruins of a Moorish castle, is to be seen, and on the latter are forests of elms, corks, and chestnuts; groves of lemon, orange, and other fruit trees, and the most beautiful gardens, as those of the Marquis of Marialva, and Pennaverde, where the rose, the honey-suckle, geranium, and many other flowers, at all seasons of the year, are found blooming, and perfume the air with their sweet odours.

LISBON,

AND THE MEDICAL INSTITUTIONS OF PORTUGAL.

This city, the *Olisipo*, surnamed *Felicitas Julia*, of the ancients, by some is believed to have been founded by Ulysses; whereas, others attribute its origin to the Phœnicians. The last is the more probable opinion of the two, for the Phœnicians are well known

to have traded on the western coast of Spain, which then included Portugal.

Lisbon is situated on the northern bank of the Tagus, in about latitude 39° N., and occupies a very large extent of ground, covering hills and valleys, and spreading out along the river for full three miles. There are two ranges of hills; one running nearly east and west, the other north and south. On the former, the principal part of the city is built; on the latter the citadel, Convent of Grace, and other edifices of note. Between these two ranges of hills is a hollow, terminating at the river. At its northern end is the principal public garden, which is a square laid off into walks, shaded by a luxuriant growth of trees, affording a cool, delightful retreat, and decorated with flowers and a large handsome new marble fountain, composed of two basins, one above the other. This fountain is ornamented with statues of sea nymphs, and has near it those emblematical of the Tagus and Douro, which are two giants holding overflowing urns. At the southern end of the hollow is the beautiful square called the Black Horse, from its having in it the famous bronze equestrian statue of King Joseph; and between these two squares is that part of the city which suffered most from the awful earthquake of 1755; and having been regularly laid off and rebuilt by the celebrated prime minister Pombal, is now by far the most elegant quarter of the city.

With the exception of this part, Lisbon may be termed both irregular and illy laid off, having generally crooked and narrow streets without side walks, and often abominably disgusting, from the custom of throwing into them filth of every description. According to what is stated in accounts of this metropolis, I should say, though dirty, that it is not near so much so as formerly; and, indeed, it is thought at this time, comparatively, cleanly. However, there is still great room for improvement in this respect. The streets being precipitous, and the city so well supplied with water by the grand aqueduct of Don John the Fifth, it is not a little surprising that they should be kept so uncleanly; and particularly in winter, when so much rain falls. It would seem that this city never was really well washed and cleansed but once, and that was during the earthquake mentioned, when the waters of the Tagus rushing back upon it, overwhelmed the lower parts, as far up as the public promenade described.

The population is differently calculated, and is not correctly known; but may be safely estimated at 250,000 souls. Emigration has been so great that it is doubtful whether the number of inhabitants is increasing. The country being small, not very fertile, and much disturbed by intestine commotions, many persons have left it to seek their fortunes, and enjoy tranquillity, in other regions.

The houses are all of stone, plastered over; are large, strongly built, to prevent damage from earthquakes, and covered with brick tile. Few of them have courts, and none terraced roofs. They are commonly occupied as stores in the first story, and have the upper

stories inhabited by different families, who make use of the same stairs. The nobility and gentry, however, have distinct buildings, and many of them possess palaces of great size and considerable elegance. Some of the royal palaces, both within and adjacent to the city, are magnificent; and, among them, the new one of Ajuda is the most remarkable. There are six of them altogether, including those of Ramellon and Cintra.

As it is not my intention to give a very minute topographical account of the place, I will stop here, and speak of matters having more of a professional bearing.

Climate.—This has been long celebrated for consumptive patients, and Lisbon is still a rendezvous in the winter for those from Great Britain. I have heard the climate much commended for its mildness; and true it is, that during February and March of the past year, Fahrenheit's thermometer was never below 56°, but it rained almost incessantly for eight days in succession, and the atmosphere was so exceedingly damp from this and the strong winds which blow down the Tagus, and sweep across the land from the ocean, that both the city and country appeared to me very unsuitable for any one having an affection of the lungs. In summer, the temperature is in a ratio to that of winter; but there is little rain, and the heat of the atmosphere is much abated from the strength of the sea breeze, which regularly begins in the morning and blows until the evening.

There is also a difference in the temperature of the higher and lower parts of the city; the former, being elevated several hundred feet above the level of the water, feel the sea breeze in full force, and are much cooler and more pleasant than the latter. For invalids, then, a residence must be chosen according to the season of the year, and to their complaints. In winter, consumptive patients should live near the river and towards Belem, the western end of the city, where the streets are wide, the sun has full power, and the northerly winds have little force from the elevation of the hills immediately back. In summer they may venture to the heights, but it is more prudent for them to choose a residence midway between the heights and the river, because they would not be, then, exposed to the transitions of temperature which take place there in the morning and evening. They would avoid the relaxing effects caused by heat and moisture, and escape the deleterious influence of the mephitic exhalations abounding below, in the level and illy-ventilated quarters of the city. When an invalid is affected with such complaints as do not require him to shun cold, and is not materially influenced by vicissitudes in the temperature of the air, he may safely live on any of the heights: but that along the summit of which runs the street of Buenos Ayres is to be particularly recommended. The fineness of its air, its openness, and the charming prospect of the city, and of the river, and of its southern shore, make it the most delightful place of residence. During hot

weather all persons subject to fevers should especially avoid that quarter where the gorge or valley of Alcantara terminates the rivulet flowing down which discharges itself into it; and a very extensive muddy flat is left exposed when the river is low and the tide ebbs.

The most prevalent winds here are the westerly and northerly. During the rainy period mentioned the former prevailed, and appear to be, as regards moisture, what the easterly are in the United States. When the latter blow strongly, the shipping lying in the river are in great danger, for it is hardly possible for the cables and anchors of any vessel to withstand the force of the wind and current combined, and particularly when the tide is setting out, the current then being so rapid that no boat, however well manned, can stem it, and the water running at the rate of five miles an hour. Instances have been known of vessels getting adrift on such occasions, and being carried to sea in spite of every exertion to check their progress; and although they are anchored off the city, and ten miles from the mouth of the river, yet as at such times it is of course necessary to cast a greater number of anchors, the cables are twisted and entangled in such a manner that hours and days are required to undo the knots, and clear them. The gordian knot was nothing in comparison with these knots, which the sword of no Alexander could loosen. The cables of hemp must be cut to pieces, those of iron must have their links undone, before they can be unravelled and the vessel again properly moored.

As for the tides, the flood begins to come in at noon, reaches the city by one o'clock, flows until six o'clock, and then ebbs from that hour until one o'clock in the morning. The greatest height the flood tide attains is from eight to nine feet, but both this and the ebb tide must be necessarily influenced by the current and the wind; the easterly increasing the ebb, the westerly causing the flood tide to rise much higher when they are violent.

Diseases.—Not having been sufficiently long in Lisbon to acquire an extensive and accurate knowledge of its diseases, and those with which I met having been chiefly in the hospitals, I will not undertake to treat of them, either in a general or special manner, and will merely remark that in the hospitals are to be seen most of those incidental to temperate climates; as fevers, intermittent, remittent, and continued, dysenteries, and hepatic affections; and likewise those most common in cold ones, as phthisis pulmonalis and other complaints of the chest. Of surgical diseases there is a great number; and venereal disorders may be mentioned as the most numerous. Concerning the diseases incidental to ships I will say still less, as while the United States, the ship in which I visited the place, was there, her crew enjoyed excellent health, very few persons having been taken under treatment, and these for trifling and ordinary complaints, as catarrhs, rheumatisms, and other affections produced by cold and dampness.

Public Institutions.—The first of these claiming our notice is the College of Nobles, which was founded by Pombal. It is a large and handsome edifice, standing on the heights; and built of the marble of the place—a hard and yellowish white lime stone forming the base of the hills, and susceptible of being worked into any shape. This institution is well organized, and continues to flourish notwithstanding political disturbances, and its name being liable to offend the democracy, which is now creeping into power, and daily threatens to overturn the monarchy and aristocracy.

Much might be said of the religious institutions—but not as they now exist—the late edict having destroyed almost the whole of them, and the Portuguese now showing as strong an inclination to irreligion as once they showed to superstition. The only three of these institutions worthy of notice are the convents of St. Vincent, Belem, and Jesus. These, as all other, convents are entirely emptied of monks, friars, and priests,—save as many of the latter as may be required for church service, and are all remarkable for their great extent if not for the excellence of their architecture. Each one has a large church adjoining. At the Convent of St. Vincent, in a vault on a level with the lower floors, are preserved the remains of nearly all the royal family from King John the Fourth, the founder of the house of Braganza, to Don Pedro the Fourth, late Emperor of Brazil. With the exception of the first named all are deposited in coffins, or trunks, covered with red silk and black velvet, and so perfectly preserved, that though they are very numerous the bodies are not in the least offensive. From this I should suppose they must have been well embalmed.

The Convent of Belem has been converted into a *Caza pia*, or asylum for all destitute male and female children. They amount to one thousand in number, there being two hundred boys and eight hundred girls; among whom forty are deaf and dumb. The two sexes are in different parts of the house; and have distinct schools, both for the acquisition of the common rudiments of education, and for the fine arts, drawing, sculpture, &c. In a hall between the church and convent are the portraits of all the monarchs who have ruled Portugal, from Don Henrique the First to the present Queen, Donna Maria the Second; excepting that of her uncle Don Miguel, who is looked upon as an usurper, and is not honoured with a place. The church is celebrated for containing the remains of St. Sebastian, the unfortunate monarch who lost his life when defeated by Muley Molock, Emperor of Morocco,—and whose remains were after many years disinterred and transported to Portugal. This church is also remarkable for being a good specimen of Gothic architecture.

In the Convent of Jesus is one of the finest libraries in the kingdom. It is contained principally in a grand hall, with an arched ceiling ornamented with fresco paintings, and lighted by twelve windows, placed between the ceiling and walls. The books amount to thirty-three thousand volumes, well bound, generally of

large editions, arranged on from twenty to twenty-five shelves, running completely around the hall, and consisting of scientific, ecclesiastical, and historical works, by the most noted ancient and modern authors. To render it easy to get at the books above, a gallery has been made around the hall. This gallery has a staircase at each corner, and a handsome balustrade on each side. The hall not being large enough for all the books, which are rapidly increasing in number from those daily coming in, many have been put in another part of the building, and adjoining the museum, which, besides a large collection of arms used by savages, contains a most valuable one from the mineral and animal kingdoms. This musuem is divided into two parts, an upper and lower, the former being in the first—the latter in the second story. In the upper part are a great variety of shells, birds, and reptiles, finely preserved and arranged in separate cabinets, and some Mosaic tables of the marbles of Portugal. In the lower part is a collection of fish and wild beasts, and a cabinet of human monsters, the most horrid of which is a child without a head, another with flippers like a turtle instead of arms, a third with one head and two bodies united as far down as the navels, and having four arms and four legs; and a fourth with two heads and one neck.* These monsters all appear to have been delivered at the natural period, and are preserved in alcohol.

City Library.—This is the largest and most valuable in Portugal, and promises to be the finest in the world; for it now contains one hundred thousand volumes, and is so greatly increased by the influx of books from the suppressed convents, that it has been recently removed to the spacious Convent of St. Francisco, where it is spread out in its numerous rooms and entries. It is designed to contain most of the books brought and coming from all the Convents of Portugal; which are said to own a million of volumes. Beneath the library is the Academy of Fine Arts, and the Schools of Sculpture and Painting, of which there are a number of good specimens done by native and foreign artists.

Hospitals.—Notwithstanding the disturbed state of the country, and the frequent changes in its government, the interests of humanity are not neglected at the capital. Though this has been of late the seat of constant seditions and the focus of revolutions, its hospitals, those never failing signs of benevolence and civilization, have remained unharmed, and are still the asylums for the infirm and miserable, the homes of all the maimed and wounded requiring the assistance of public charity.

The principal hospitals in Lisbon, are the Estrellastar, or Military; and that of Santo Jose; or St. Joseph. The former is situated near the beautiful church bearing the same name, in one of the most elevated parts of the city; and having a large yard in front, a lot of several acres at its back, its site may be considered excellent. This

* See Plate I, figs. 1, 2.

building is about two hundred feet square, two stories high, constructed of stone; is plastered externally and internally, has two courts, a high flight of hewn stone steps in front, and handsome marble stairs connecting the upper and lower story. In the latter, are the store-rooms, wards for prisoners, and the chapel, which contains several good fresco and oil paintings, and some fine specimens of gilded carvings about its altars. Beneath its floor are the vaults for the dead. In the upper story are the wards for the soldiers, the rooms for the officers, and other apartments.

Each ward is capable of accommodating from thirty to forty patients, is furnished with iron bedsteads, and has a plank floor, which I think is preferable to one of brick or marble, and especially in the winter.

All the apartments were in good order, and supplied with everything which could essentially contribute to the comfort and convenience of the sick, who were said to be a hundred and fifty in number. Those who were not too much debilitated, and not forbidden to do so, were allowed to take exercise in the yard and courts, or in the entries, which, terminating in balconied windows, command an extended prospect of the city and country.

The faculty consisted of one physician and of five surgeons, who attended the sick in rotation. In fine, this hospital being strictly military was remarkably quiet, clean, and well regulated; and for preserving order sentinels were stationed without and within.

The Hospital of St. Joseph stands towards the eastern end of the city, in a closely built, but an elevated quarter. It has before it a large yard, well shaded by trees, and a spacious arched gate, ornamented on top by two marble statues; one of which represents a person with a surgical, the other a person with a medical disease, and holding a tablet, on which is the following inscription:—"Monumentum hoc ad perpetuam memoriam restaurationis Portugalæ, in hac die commemorata erectum fuit Anno Domini die decima quinta Septembris, MDCCCXI."

On the western side of the hospital are the ruins of the church of St. Joseph, which was thrown down by the earthquake mentioned, and being left undisturbed must long continue a sad monument of that dreadful calamity.

The hospital itself forms a hollow square, about the size of the largest squares in the city, is three stories high, made of brick and stone, has a grand flight of stairs composed of marble, and its walls on each side lined with blue porcelain tiles, which serve both for ornament, and to prevent the soiling of the walls by the crowd of persons constantly going up and down. The main entrance, which is at the foot of these stairs, is decorated without by statues of seven of the Apostles. Each statue has about it some emblem of the death suffered by the Apostle whom it represents.

The wards are divided into medical and surgical. The two finest of them, in the second and third story, are fifty feet wide,

four hundred long, and extend from one end of the building to the other. Each of these two wards has its ceiling supported by twenty-six arches, resting on fifty-two columns, and is paved with bricks. The other wards are similar to the two described, and all in the house are plainly, but neatly furnished, and have hydrants supplied with water by the grand aqueduct. Food and medicine are served out with the utmost care and regularity. The former consists chiefly of soup, rice, and fowls, and is prepared in the kitchen, which is on a grand scale, and furnished with all the implements required in such an extensive establishment. The cooking is mostly done in burnished copper caldrons, and every article is served out under the supervision of a clerk, who sits with his account books before him, and behind a semi-circular table, which extends from one side of the room to the other, and separates the cooks from the servants.

The hospital is attended by four surgeons and five physicians; between whom the wards are divided, and each one of them is required to visit his patients daily.

The eastern side of the house is occupied by the Medico-Chirurgical School of Lisbon, and contains its lecturing and dissecting-rooms and library, which is composed of several thousand volumes of medical, surgical, and other scientific works. The dissecting-rooms are in the first story, well aired and lighted, and plentifully furnished with subjects. There are two hundred students, and all of them have the privilege of attending the clinical lectures given by the surgeons and physicians, and receive theoretical and practical instruction at the same time.

Subjects always numerous, the wards always well filled with patients, and the best oral instruction given, the students seem to possess every facility desirable for attaining a knowledge of their profession.

The medical government of the hospital belongs to a council formed of a vocal, nominated by the corporation of Miseracordia, and acting as president; of a vocal nominated on the part of the hospital to represent the establishment; of one physician, and one surgeon taken annually from among the professors performing clinical service in the hospital; and of the school Director. Their secretary is the scribe of the hospital appointed by the council. Deliberations are held by order of the president, and the two vocals being present, questions are decided by a plurality of votes. This council is the arbiter in all disputes relative to service in the hospital. The school council has authority in everything relating to clinical exercises; has authority to select the patients whom they think most proper for the infirmaries, and have their requests concerning the economical and domestic management of these attended to by the former council. As to the economical government, it is conducted on a system of mutual compromises, and according to the regulations of the hospitals and the Miseracordia.

Medical Institutions of Portugal.—These are now comprehended in the Medico-Chirurgical Schools of Lisbon and Oporto, formerly

denominated the School of Surgery; the Medico-Chirurgical Schools of the Insular, or ultra marine administration districts; and the three Schools of Pharmacy, in Lisbon, Oporto, and Coimbra. The laws enacted by the Queen, Dona Maria, for the government of these institutions, were promulgated on the 29th of December 1836, and are enforced under sanction of the following decree, made by her, and issued by the Secretary of State for Home Affairs.

DECREE (*translated*).

"Understanding that the Schools of Surgery in Lisbon and Oporto, destined especially to form a class of the Faculty, esteemed necessary and important, can be improved, not only with profit to public instruction, but with great utility to the Hospitals of both cities, I think proper to decree, in continuation of the general plan of studies, the part relative to these schools which has been offered me by the vice-director of the University encharged with that plan, and which has been signed by Manoel da Silva Passos, Secretary of State of Affairs in the kingdom. The Secretary of State of Affairs in the kingdom may in like manner make this known, and cause it to be executed. Palace of Necessidades, the twenty-ninth of December, one thousand eight hundred and thirty-six.

"QUEEN.

"MANOEL DA SILVA PASSOS."

Agreeably to the above decree, both the Medico-Chirurgical School of Lisbon, and that of Oporto, has a director, who is a member of the faculty, appointed by government; nine professors, called Lent Proprietors; four substitutes; two demonstrators; one keeper; one guard; and a porter. Two of the substitutes are physicians, and two surgeons, one of the demonstrators is a physician, and the other a surgeon. To these demonstrators are allowed substitutes, who assist them, and perform other services directed by the council of the school. This council is composed of the director, who presides; of the professors, and their substitutes; and has the scientific and economical inspection of the institution, under supervision of the minister of the kingdom, with whom the director corresponds immediately. The functions of the council in all things not expressed by the decree, are regulated by the statutes of the university concerning medical congregation, and by the rector. The book of the orders and employments of the school, and of the annexed establishments, are kept by the secretary under the inspection of the director, who signs it, and transmits it to the administrator-general for its ultimate destination.

One of these two schools is located, as already stated, in the hospital of St. Joseph at Lisbon, and the other in that of St. Antonio at Oporto. In each school the courses of study are the following:

During the first year, the student attends to Anatomy and Chemistry.
During the second year, to Physiology, Hygiene, Zoology, and Botany.
During the third year, to the Natural History of Medicines, Materia Medica, Pathology, External Therapeutics, and Clinical Surgery.
During the fourth year, to Practical and Forensic Surgery, Midwifery, Diseases of Lying-in-Women and Infants, and Clinical Surgery.
During the fifth year, to the History of Medicine, General Pathology, Pathology, Internal Therapeutics, Clinical Medicine, Public Hygiene, Legal Medicine, and Clinical Surgery.

These different branches are divided among the nine professors, and constitute nine distinct series of studies. One professor superintends the students of the first year, one those of the second, two professors those of the third, two those of the fourth, and three the students of the fifth year. Four of the professorships are reputed medical, and five of them surgical. Pathological anatomy is studied together with pathology, and demonstrated whenever suitable cases occur in the clinical wards. Two lectures are delivered weekly by the professor of clinical medicine, on legal medicine and public hygiene, without interruption of his clinical lectures.

Salaries and Exemptions. — The director receives annually, 100,000 reis, or 250 crowns, which are equal, according to the present value, to 150 dollars. Each of the professors has a yearly salary of 700,000 reis, each substitute 400,000 reis, each demonstrator 300,000 reis, the keeper 240,000 reis, the porter 200,000 reis, and the guard 100,000 reis. The professors, after ten years of faithful service, are granted annuities of one half the amount of their salaries; after fifteen years of service they receive two thirds, and after twenty years the whole amount. The professors of the old schools claiming exemptions for services anterior to November 15, 1836, have their annuities regulated by the ancient law. No professor is entitled to an annuity until ten years of service from that date; and after the lapse of this period all annuities will be regulated agreeably to the new law. Vacancies which occur in the professorships are filled by the school council, after a public notice of sixty days. The appointment of the first body of professors was made by government. Candidates are required to produce certificates of the degrees conferred on them, and the letters of surgeons, which they have received. Substitutes become professors, and demonstrators substitutes, according to their seniority. Two substitutes act as secretary and librarian, and are nominated by government at the recommendation of the director. The keeper is treasurer. He also serves as assistant in the anatomical theatre, has charge of the cabinets, keeps all the machines and instruments in order, and reports the faults of the students. Before appointment, he must have been a student in the school for at least two years, and he may be appointed or dismissed either by the director or the council.

Of the Students.—Those persons who wish to matriculate for the

first year, must furnish the director with certificates of their having attained the age of 14 years, and gone through certain studies in the lyceums. This regulation respecting the lyceums, will not be enforced until five years after their establishment; and anterior to that period the ancient qualifications will hold good. The fee of matriculation for each year is 9600 reis, or $16 80. For the title conferred at the conclusion of the studies of the fourth year the same fee is paid, and for the letter received at the expiration of five years, and after the examinations, theoretical and practical, they pay the sum of $21 60 cents. Should the students attend subsidiary studies in other institutions, they pay no other matriculation fee than that above mentioned.

Among the students are included the midwives, who are women, and for whose instruction there is in each of the medico-chirurgical schools a biennial, gratuitous, theoretical, and practical course of studies. Lectures designed especially for their instruction are delivered by the professor of midwifery, who likewise instructs them practically in the infirmaries. In the hall of obstetrics, a place is expressly provided for their accommodation. Persons desiring to be midwives have to matriculate separately, to present certificates of knowing how to read and to write, and to undergo at the expiration of the biennial course a theoretical and practical examination on the accidents and diseases which precede, accompany, and follow delivery, and on the method of treating them. The professor of midwifery, that of surgery, and one of the surgeons in the hospital appointed by the school council, form the board of examiners. Approval depends on the plurality of votes. If the candidate pass, she receives gratuitously a letter of midwifery, signed by the secretary, approved by the director, and sealed with the seal of the school.

Ultramarine Schools.—In each of the administrative ultramarine districts, at its Hospital of Miseracordia, there is a medico-chirurgical school, having two professors; one of anatomy, physiology, surgery, and obstetrics; the other, of pathology, materia medica, and therapeutics. The first named professor is the principal surgeon of the hospital, and receives a salary of 750 dollars. He has an assistant, who, under his inspection, makes anatomical preparations, and is demonstrator and chief of the hall of dissection. For his services the assistant receives 450 dollars a year.

The second professor is the principal physician of the hospital. He delivers, in addition to lectures on the above branches, a course on clinical medicine. His salary is the same as that of the first professor. A council, composed of these two professors, the assistant, and apothecary, has the inspection and direction of the school. The physician is the president, and the apothecary the secretary. This council examines the candidates, and confers letters of licentiate, granting permission to practise the profession; but only in prescribed places where there are no regular graduates.

The instruction and examination of pharmaceutists take place in

these schools, and the students of pharmacy learn that science in the apothecary's shop of the hospital, under the inspection and instruction of the pharmaceutist, who for his trouble gets 90 dollars a year.

Midwives are instructed by the professor of surgery in the manner specified in speaking of the schools of Lisbon and Oporto.

Schools of Pharmacy.—Annexed to each of the medico-chirurgical schools of Portugal is a school of pharmacy, for which the Directors, Secretary, and Treasurer, perform the duties required of them in their respective offices. There is a third school of pharmacy at Coimbra. In each of these three schools there is a theoretical and practical course of instruction; the first of which consists of botany, chemistry, pharmacy, and natural history of medicines; and the second of the exercise of pharmaceutical operations for the space of two years, either in the dispensary of the school, or in some other approved and accredited one.

Chemical and botanical instruction can be obtained either from the professors at Lisbon, Oporto, or Coimbra. Lectures on the natural history of medicines and pharmacy are delivered by the professor of materia medica, in the period of two years, to the students of pharmacy; who after being examined in chemistry and botany are admitted as a separate class into the hall of materia medica. These students, likewise, are obliged before entering the schools to go through certain studies in the national lyceums. For matriculation and letters they pay the same fees as other students, and for their practical instruction the pharmaceutists of the schools receive the same compensation as those in the ultramarine districts. After having gone through the biennial studies these students are also examined. In each school for this purpose is a special board, composed of the professor of materia medica and pharmacy, of his demonstrator or his substitute, and of the apothecary of the pharmaceutical dispensary.

Pharmaceutists who have not attended the theoretical and practical courses prescribed, are admitted to examination by this board, upon producing certificates, signed by the authorities of the places to which they belong, of their being twenty years old, of the studies they have gone through, and of their correct habits. Before being examined they have also to pay a fee of three dollars and sixty cents, and furnish testimony from the pharmaceutists with whom they lived of their good behaviour. Moreover, no one is examined who has not been practising pharmacy for eight years. To ascertain those entitled to examination, all the apothecaries keeping shops are obliged to send annually to each one of the three schools of pharmacy a register of the persons practising in their shops, with their names, and those of their places: the time of commencing practical study; that which they have been studying; and an account of the progress each one has made. On the subjects of botany and chemistry they are asked only questions relating strictly to

pharmacy, but in the latter science are examined both as to theory and practice.

Finally, letters of pharmacy are conferred on all found qualified. No school is allowed to confer one on any person who has not conformed to the rules established, in every respect; and no pharmaceutist will be permitted four years after the publication of the above decree to open a new shop without having been examined and approved in the manner specified.

It must be evident that, under these wholesome laws and the patronage of government, the medical institutions of Portugal must improve and flourish. Objections may be made against them because of their dependence on government. It may be said it would be better that they should subsist by their merits exclusively; it would be more profitable to the faculty, and more advantageous to the public to have them supported by the fees of the students, and for the professors, as in our country, to be compensated in a ratio to their popularity. I will not discuss any of these points, but will terminate this account by observing, that the profession of medicine bids fair in Portugal to attain the high rank, public esteem, and high respectability possessed in the other civilized countries which have properly appreciated its merits.

SPAIN.

Of this extensive country—in which are found so many objects deserving of attention, and of subjects worthy of inquiry—I shall not undertake either a minute or general description; as I should, if I did so, go entirely beyond my prescribed limits, and should be obliged to rely rather on information received from others than on that collected by myself. For these reasons, after some general remarks, I shall proceed to speak merely of those parts with which I am best acquainted, and then communicate such information as I have been able to gather regarding the profession of medicine in this country.

Spain, as is generally admitted, is naturally one of the most charming regions in the world; and by her climate, soil, rivers, and mountains, her animal, vegetable, and mineral productions, is justly entitled to the reputation of being one of the finest kingdoms in Europe. The climate, however, is not uniform; a great difference existing between that of the northern and southern provinces, and between that of the plains, valleys, and mountains, especially those of the greatest eminence, as the Sierra Nivada, or snowy mountains, running through Grenada,—the Sierra Morena, Montserrat, and the Pyrennees, some of which are so high that, even in summer, their tops are more or less capped with snow and ice. The temperature of the air, therefore, about these mountains is very

different from that of the low country, and must necessarily subject it to great vicissitudes of weather. Nevertheless, these mountains serve to moderate the excessive heat of summer, render the climate suited for the growth of a much greater number of valuable plants, supply an abundance of ice during the hot season, produce extensive forests of the largest trees, and maintain a race of hardy, athletic, active, and courageous men, for the cultivation of the soil, or for bearing arms in the defence of their country. Moreover, from the mountains proceed many copious streams of the best water, and many of the most precious minerals, as coal, sulphur, lapis lazuli, asbestos, cobalt, garnet, gypsum, a variety of marbles, saltpetre, muriate of soda, turquoise, lead, iron, copper, tin, silver, and mercury, which last is one of the richest sources of revenue to the kingdom, and forms one of the most valuable articles of exportation.

Lastly, the mountains may be said to be advantageous from their being composed chiefly of limestone, which, mouldering away, is swept down by the rains; and being carried into the valleys, render them still more rich and productive. In fact, the soil of Spain owes its fertility, in great part, to the large quantity of lime it contains, and this may be said to be derived chiefly from the mountains.

With animal and vegetable productions Spain is also bountifully supplied. All the domestic animals, as hogs, sheep, asses, mules, goats, horses, and cattle she possesses in the greatest abundance; and in rabbits, deer, partridges, woodcocks, and other game, she is not deficient. Her horses are famous for strength, swiftness, and beauty; and her sheep for their immense numbers, and the vast quantity of the finest wool, not only for domestic but foreign manufactures. Before the commencement of the late wars in Spain she is said to have had no less than thirteen millions of the latter animals, and from the merino sheep alone to have received annually about twelve millions of pounds of wool.

Among her vegetable productions are the chestnut, pine, ash, yew, beech, walnut, cork, and many more forest trees; and of fruit trees she has the pear, apple, cherry, peach, apricot, olive, mulberry, fig, orange, lemon, and pomegranate; she likewise produces a great variety of the smaller kinds of plants, which are valuable for their nutritive, odoriferous, and medicinal qualities, or for their beauty, or for the materials they afford for manufacture.

Being, then, so bountifully blessed by nature with almost everything which can make human beings contented and happy, it is truly strange that Spain should have been always one of the most discontented countries on the globe, and that her inhabitants instead of being peaceful and friendly should be so warlike and quarrelsome—being eternally engaged in foreign or civil contests. Much of their discontent and unhappiness may be ascribed to bad government, but quite as much is owing to natural irascibility; for their temperaments are bilious and nervous, which, of all others, render their owners susceptible to the display of this quality of mind.

SEVILLE, AND ITS ENVIRONS.

In no part of Andalusia is the traveller presented with a more lovely prospect, a wider field of observation, than near this long-renowned city. Pursuing his course up the winding Guadalquiver, he beholds on both its southern and northern shore a vast plain without an undulation, clothed with a luxuriant crop of grass, and having upon it no other objects to interrupt the view than numerous herds of cattle, droves of mules and horses, and flocks of sheep; and he sees innumerable wild ducks, geese, and turkeys and plovers, cranes, and other birds flying from bank to bank, or scattered over the plains and the surface of the river. Looking beyond these plains, he sees a chain of rocky mountains running from north to south towards the Mediterranean; and between them and the plains, hills and ridges clothed with olive trees, laid off into phalanxes with so much accuracy that it is impossible to distinguish any difference in the distance of any two trees or rows from one another. When he has gotten near the city, he finds fields of wheat, orchards of pomegranates and orange trees inviting him to partake of their luscious burdens, and gardens filled with flowers and plants of every kind, offering an exhaustless store of botanical knowledge.

City.—This is situated chiefly on the southern side of the river, at a bend, and upon a continuation of the plain described. It is divided into two principal parts; the old city, or Seville proper, and Triana, which is on the north side of the river, and connected with the other part by a bridge of boats. Neither part is more than fifteen feet above the river when it is at its usual height, and the two contain about 100,000 inhabitants, at least four fifths of whom live in Seville proper.

The latter is encircled by a wall somewhat less than five miles around, or according to Spanish measure 8750 varas in extent. It is stated that these walls were built by Julius Cæsar. They were repaired by the Moors, and subsequently by the Spaniards; are made of brick, pebbles, and mortar, and flanked by low quadrangular towers, having small embrasures, after the Moorish style of fortifications. A deep and broad trench encircles these walls, and renders the city still more inaccessible to an enemy.

There being so large a population in so small a compass, as a a matter of necessity the streets are narrow, but the houses are not therefore lofty, few being over three stories and many only two. The streets are well paved with pebbles, and are in a tolerable state of cleanliness. Some of them are exceedingly crooked, and many of them intersect one another at oblique angles, so that they are very intricate, and it is no easy matter for a stranger to find his way from one quarter of the city to another. The widest street cannot be over thirty feet across, and the average width does not exceed fifteen feet.

Of the buildings I will observe, that all, save a few public ones, are constructed of brick and coated with lime; their roofs are sharp topped, and of brick tile; their windows grated below and balconied above; their floors of brick and porcelain tile; and all of the buildings, both public and private, with few exceptions, have *patios* or courts, paved with brick tiles or marble slabs. Access is had to these courts through grated iron gates, and from the courts to the apartments above and below. Some of the public buildings, as the archbishop's palace, or the Palace of Seville, and the cathedral, are made of a soft and yellowish lime stone. In the furniture of the private houses, and in the decoration of the public, little attention is paid to any thing else than paintings, which even in the residences of the lower classes are found completely lining the walls of the parlours and frequently those of the chambers. The paintings are universally of oil, and are generally executed upon canvas. Among them are to be seen many by the first Spanish artists. Water is supplied from cisterns, filled by rain collected from the roofs, and by an aqueduct which conveys it from the high lands to the north-east, several leagues distant. Its sources are three springs near the town of Alcala de Guadaira.

Public Institutions.—The most famous of these is the university, which, although Seville has lost nearly all the commerce by which she became so opulent, is still one of great importance, there being at this time as many as 3000 pupils belonging to it, who are engaged in the study of the various branches of literature. These pupils are distributed in the city, the university though large not being sufficiently extensive to afford any other than apartments for the different professors, and for studying. The classes resort to the university daily, for recitation, study, and hearing the lectures. Having different hours for attendance they are all accommodated. As at all other Spanish universities, there is a school of medicine, but it is in low repute, being entirely eclipsed by the medico-chirurgical schools; and in truth from what I saw it may be said to exist in name alone. To speak candidly, I was neither pleased with the building itself nor with the manner of conducting its studies; and some of the students appeared to resort there rather for the sake of lounging and amusement than for that of receiving instruction. Muffled in their cloaks they were seen listlessly sauntering in the courts; some walking about, others collected in groups to converse, while a professor was engaged in delivering a lecture within a few paces of them.

Besides the university, there were once many more places of instruction, and especially at the convents; but these being suppressed, their schools of course have been likewise. Of the college of St. Telmo, which stands without the walls, and upon the river, I might speak at large; but as it has shared the fate of the other colleges, all that it is necessary to state is that it is a grand establishment, and was instituted exclusively for instruction in nautical sciences during the commercial prosperity of Seville.

I might go on and write a volume about the convents, which were full of, but now exhibit few objects of interest save the paintings in their churches; but it being foreign from my intention to give more than a sketch of things not appertaining to my profession, I will merely remark, that formerly there were twenty-nine for monks, or *religiosos*, and thirty-nine for nuns, or *religiosas*, and that ten of them were colleges.

Hospitals.—Such was the philanthropy of the citizens of Seville, that in 1789 there were forty-nine hospitals of various kinds in the city; and in its history it is stated that their number was so great in 1588, that it was found necessary to reduce it, and accordingly *seventy-six* were abolished. At this time there is only one of note, that of *Sangre*, or *Cinco Llagas* as it was once called, in allusion to the five wounds inflicted on our Saviour. This hospital originally stood in the city, but is now situated without the walls, between their northern face and the river, at the distance of four or five hundred yards. It was founded in 1500 by Señora Dóña Catalina de Ribera, and her son Don Fadrique Enriquez de Ribera, Marquis of Tarifa, and was designed for the cure of women alone. The present building was begun in 1579, and brought to its present state in 1617, but it is on so grand a scale that it is not yet completed, and it is probable it never will be. This edifice forms a hollow square and is nearly six hundred feet in extent on each side. It is built of hewn stone, is two stories high, has a tower at each corner, a noble court, in the centre of which is a large and handsome church, also constructed of stone. To each story within the court is a corridor; and on its south side is a grand gateway, adorned with Doric and Ionic columns, and guarded by a company of soldiers. Its floors and roof are constructed of the same materials as those of the buildings in the city; it is divided interiorly into many rooms and wards, of dimensions corresponding to the size of the building. Were this completed I suppose it could be made to accommodate twelve hundred patients in the best manner.

This institution was, as mentioned, first designed for women, afterwards it was used for the benefit of both sexes; but at this time is appropriated to the reception of the sick and wounded of the army alone; and is therefore simply a military hospital. Of course its regulations are military and no longer civil; the ecclesiastics who once governed it being entirely excluded from its administration.

In the wards I saw a large number of surgical and medical cases, but none of such importance as to merit particular notice: the diseases having been of the most common kind. The army not having been actively employed, few of the surgical complaints were owing to violence, and no gunshot wounds were to be seen. The patients appeared to be barely comfortable, the bedding, clothing, and other necessaries, not deserving commendation, but bearing that aspect of want peculiar to all things dependent on

the finances of the kingdom, and under the control of its government.

Being so well located, well constructed, and arranged, it is really a pity to see this magnificent structure dilapidating for the want of a little labour and a trifling expense. Years of toil have been spent, and many thousand dollars expended in its erection, and nevertheless it is allowed to moulder away when a few days of labour, and a small sum of money, would, if not bring it to the state of perfection designed at its foundation, at least render it a much more fit habitation for those who, in serving their country, have the misfortune to loose their health, or to be injured, and deprived of the use of some of their members, by the casualties incident to their profession.

Much of interest might be said of other edifices and establishments. I will however for fear of prolixity pass them over, and only remark that the cathedral, the alcazar, the cannon manufactory, and that of segars, are, especially the two first, on a grand scale, and well calculated to arrest the attention of the traveller. The cathedral is one of the largest and most elegant gothic churches in Europe; and contains several of the finest paintings of Murillo; the remains of St. Ferdinand, or Ferdinand the Third, who expelled the Moors from Seville; and a superb library. The alcazar was the palace of the kings and princes of Seville from the time of Abdalis, who erected it sixty-seven years before the expulsion of the Moors; and is still the residence of the royal family of Spain whenever they visit the city.

Climate.—The site of Seville—being in a valley through which runs a slow meandering river—cannot be called a healthy one. Its atmosphere is certainly too hot and humid for a large population pent up within walls, and living in an illy-ventilated place, where it is exceedingly difficult for the wind to penetrate, not only on account of its walls, but also of its houses being so crowded together. Seville indeed has the reputation of being the most sultry city in the country, and its inhabitants manifest their sensations if not their opinions on the subject, by the extensive public walks or *alamedas* which they have made within and without the walls, and have beautified at much expense. There not being space sufficient within the walls for more than the old alameda, made in 1574, the alamedas, termed from their beauty and delightfulness the *delicias*, were formed. These extend along the river, between it and the walls, from the bridge of Triana to the distance of a half mile below the city. The old alameda is on the northern side of the city, and is an oblong square, planted with rows of elms of huge size; furnished with seats of brick on the sides, and adorned in the middle by fountains: at its eastern end are two granite columns of the Corinthian order, with marble capitals and pedestals. Resting upon the capitals are two lions, sustaining the arms of Spain; and upon

the pedestals are inscriptions, signifying that the people of Seville in 1283, having manifested great loyalty and affection to Alonzo X, then at war with the partizans of Don Sancho, the former granted them singular privileges, and had honoured Seville with the seal and motto of Madexa, which are the Latin word Nodo, with a figure of eight, knot in the middle; as thus, NO:8:DO; thereby to represent the indissoluble loyalty of the city to its sovereigns. This motto, from the time it was conferred, has been inscribed in this manner upon the Sevillian coat-of-arms, and is found both on these columns and upon other public monuments.—At the western end of the alameda are two other columns of similar structure and materials, of about fifty feet in height, and having two gigantic statues on top; one of Hercules the founder, the other of Julius Cæsar the amplifier, of Seville. To form an estimate of the excessive humidity of the air, one need only look at these columns and statues; for from their natural colour they have become almost green owing to the great quantity of moss covering them. This alameda is now neglected, being little resorted to by the citizens; and its elms, its seats, fountains, and columns, have a like appearance of great age and want of attention.

The delicias, now called those of Christina, in honour of the Queen Mother of Spain, are the favourite resorts for, and the fashionable promenades of, the Sevillians. Neither nature nor art could do much more to render them deserving of the name they bear, and suit them better for either the sick or for the well. Like the old alameda they have rows of elms, benches, and fountains; but besides these there are hedges, beds of flowers, private walks, and a large and beautiful garden near the College of St. Telmo, which is surrounded by a handsome paling, and has in the centre a platform of white marble, of a circular shape, of several hundred feet in circumference, and having seats around its borders, on which those promenading may repose, enjoy the refreshing breezes blowing upon the river, shield themselves from the scorching rays of the sun beneath the branches of the overshadowing trees, and inhale the sweet odour of the plants and flowers in the garden. For this most charming retreat, and other improvements in the delicias, the city is indebted to Aljola, its governor during the reign of Ferdinand the Seventh, and who is said to have had only one redeeming quality—a spirit for public improvement—being most heartily despised in every other respect by the Sevillians.

This city, then, having great attractions without, if not within it, may be very properly recommended to invalids who desire to avoid a frigid climate, and spend the winter in one which is mild and somewhat humid, and not subject to great or sudden transitions from heat to cold. It, however, must be forbidden to those afflicted with neuralgia and intermittents, for although there are no marshes, the richness of vegetation, the heat and moisture of the air, the levelness of the country, favour the generation of miasmata.

CADIZ, AND THE COUNTRY ADJACENT.

There is no city I have visited abroad whose prepossessing exterior corresponded so much with its interior, and the first impressions from which caused less disappointment. In approaching it from the ocean, it seems to be a hill of snow-white marble, rising from its bosom, and sculptured into a city. When one is near it, the darkness of some objects within, and its sea-beat walls, in a measure, diminish its beauty; but its regularity, its high terraced, tower-topped, and white-washed houses; its domes and steeples, its castles and fortifications armed with cannon, always in readiness to repel an enemy or to salute a friend, still make it enchanting to the sight.

This city, the *Gades* of the Romans, stands upon the extremity of a long narrow peninsula, projecting on the north-west into the ocean from the island of Leon. This peninsula is not more than fifty feet above the level of the sea, and for the most part is much less, not being half that high where it unites with the island, and about the margin of the water. Its most elevated portion is that occupied by the city, with a foundation of limestone rock; but the other is a mere sand bank, thrown up in the lapse of ages. The city is situated between the ocean and its harbour, which is a bay six miles across and ten in length, formed between the island and main land. At its entrance are some rocks, running out from the point of the peninsula, and forming a natural breakwater. But for these rocks the shipping would be much less secure, and the harbour nothing more than an open roadstead. In fact, it is not much more than this to men-of-war of large size, which are, from the shallowness of the water, obliged to anchor towards its middle, and cannot get under the lee of the city when the wind blows from the north-west. When this happens, the sea comes rolling in with such violence that few cables are capable of withstanding it; as proved last winter by the United States having had two broken, and being driven upon a shoal. Shortly after this accident, a similar one occurred to the French ship-of-the-line, the Suffrein, which was made a wreck, was deserted by her crew, and was not gotten afloat until assistance had been sent from France, and prodigious power exerted by the use of steamboats. During the same season a brig got adrift, floated outside the harbour between the rocks, was driven to sea, and wrecked on the coast near Trafalgar: and a felucca, which had entered the harbour and was beating up to the anchorage, had her sails split to pieces; and having been driven ashore opposite the city went to pieces, all her crew miserably perishing in the surf.

Cadiz is completely encompassed by fortifications of hewn limestone, varying in height and thickness according to the parts to be defended. On the south-west side, towards the ocean, they are only a few feet high, and of proportionate breadth; on the north-east

side, and at the point, they are commonly about thirty feet above the water, and from thirty to forty feet in thickness at top, having magazines below and terraces above, answering both for batteries and promenades. On the sides of these walls, next the town, are benches for the convenience of the soldiers and citizens, and in the side next the water are the embrasures. The fortifications to the south-east, and looking towards the island, are constructed like those just described, but they are treble, and have three immense moats between them, over which draw-bridges, coated with iron, are placed to afford egress and ingress to those going from or into the city. The circumference of these fortifications within, is about three miles; an avenue, or street, going around between them and the houses. The city, of course, is not quite so extensive, and is confined to a still more limited space. The streets are, on an average, not above fifteen feet across, are well paved with pebbles and stone flags; and considering that, from the want of water, they are never washed save by rain, they are tolerably clean. With some exceptions they are straight, and intersect one another at right angles. Of the houses I will only observe, that they are large, well built, flat-roofed, made of stone, and have square towers on top, and courts or *patios* in the centre. The windows of the first story are grated with iron bars; those of the other stories have covered balconies, painted of different colours, and forming very handsome ornaments to the houses. The interior arrangements are much the same as those of the houses in Seville, and to describe them would be mere repetition. Water is furnished them from cisterns, which are filled by the rain collected on the roofs, and conveyed down by pipes. There is likewise a vast deal of water obtained from the fountain at Port Saint Mary, on the opposite side of the bay. This water is brought over in casks, by large boats with lattine sails. A very great number of these boats is employed in this business; and they are incessantly sailing across the harbour from morning to night, unless the weather is too boisterous, and the surf at the mouth of the Gaudaletta too high, for them to attempt crossing the bar which stretches across its mouth.

To compensate for the narrowness of the streets there are several public squares, of which by much the finest is that of Saint Antonio. It is in the heart of the city, of large size, paved with hewn stone, and surrounded by rows of handsome trees, beneath which are seats, whereon, during the evening, hundreds of ladies and gentlemen are seen resting themselves, and partaking of refreshments from the adjacent refectories.

There are also two *alamedas*, one on the harbour near the point, and between the walls and the houses, another without the walls, between the city and the island. The latter is new, and much the most extensive, being nearly a mile long; but the former is the handsomest, the trees being grown, and affording a good shade, and there being about it a number of columns and other ornaments. The people of Cadiz, therefore, having so many places for pro-

menading, the squares, walks, and fortifications, make great use of them in hot weather, and enjoy to the best advantage the pure air and refreshing breezes for ever passing over their city from the ocean, or from the land.

The alameda outside the walls, when its trees grow up, will exceed the other in beauty, and is already a delightful walk, having gardens on each side, and one near the walls and next the harbour, which was made by the late governor, Don Philip Fleures, and is very tastefully laid off. In it are many lovely walks and beds of flowers, bordered by box tree hedges, elegantly trimmed.

At the termination of this alameda towards the island, are the fine church of St. Jose on the side next the harbour, and the cemetery on that next the sea. Here the most, if not all those who die in Cadiz are buried; the churches, which once were the only places for interment, having their vaults closed. This cemetery is on a grand scale, and so entirely different from any one in the United States, that a description may not be amiss. It consists of five lots of from half an acre to an acre, enclosed by stone walls eight or ten feet thick, and from twelve to fifteen feet high, and communicating with each other by gates. In these walls are horizontal cells just large enough for the coffins of adults, arranged in five rows, one above the other, and divided into sections of thirty-five each, by pilasters extending vertically up the wall. Each cell is closed by a marble or other slab, on which is written the inscription, after the fashion of Spain; as, aqui yace Don Pedro Lorenzo del Quisida, natural de Cadiz, de edad de 60 años. Fallecio el dia de E nero de 1814. "Here lies Don Pedro Lorenzo of Quisida, a native of Cadiz, aged sixty years. He died on the eleventh of January, 1814."

In the first lot or court entered, it being the first made, are a grove of wide-spreading locusts, which perfume the air with their delightfully odoriferous flowers, and, while they are shading the habitations of the dead, furnish a charming place of solitude to the living, where they may either indulge in meditation, or give vent to their grief, and mourn for their deceased friends and relatives, whose remains surround them.

Before burial, the dead are carried into the church for the performance of the funeral rites practised by catholics. No ceremony is performed at the act of interment, at least I saw none at a funeral which I attended; but the coffin, one covered with black cloth, with a lock and hinges to its lid, and wider at the head than at any other part, was pushed into a cell of the ground tier, sprinkled with a little earth, and closed up without a word being said. This was a displeasing sight—the funeral wanting altogether that solemnity witnessed in this country; and if the coffin had been hidden no one unaware of his being in a cemetery would have supposed an interment was taking place. Indeed, the manner of putting the coffin into the cell may remind a person of that of a baker shoving bread into the oven, it being done apparently with the same want of feeling, and with as little solemnity and veneration.

With this mode of interment, however, I was much pleased; it is much less troublesome and expensive than that in graves. A very large number of bodies can be deposited in a small space, and the cell being perfectly sealed, the cemetery entirely beyond the limits of the city, the health of the inhabitants cannot be injured by the noxious effluvia formed during the putrefactive process. Moreover, in case of its being necessary to remove the cemetery, the bodies can be extracted without difficulty, without exposure of the deceased, and that confusion of bones occurring when the dead are removed from an ordinary burying ground. The only serious objection to be made to this cemetery is, that Cadiz being a fortified town, one of much importance in war, is liable to be besieged; and should it be, the enemy must necessarily make their attack by the neck of land mentioned, and upon which the cemetery is located. In this case, the assaulters might respect it and leave it unharmed, but the defenders could not fire a shot, nor throw a shell without danger of violating the sacred depository, knocking down the walls, exposing the remains of their deceased relatives, and causing a sight too shocking for humanity to witness.

Public Institutions.—Being most advantageously located for commerce, deriving from it an inexhaustible store of wealth, Cadiz has long been a city of pleasure; but nevertheless, has not been unmindful of what is due to philanthropy. Her opulent citizens, amid their pleasures have not forgotten nor neglected the infirm and miserable, nor the desolate and unprotected. Neither the aged and helpless widow, nor the young and starving orphan, has been allowed by them to suffer, and cry in vain for assistance.

The first institution which I shall notice is the Foundling Hospital, or *Hospiciis de Espositos.* It is situated in a central part of the city near the harbour, and is a large stone building, constructed after the plan of the private houses. This hospital is under the superintendence of five sisters of charity, who are remarkable for their gentility, kindness, and neatness, not only as respects themselves but all things belonging to the establishment.

The foundlings are generally left at the door or in the court, and having been taken in charge are deposited in the wards, where they are laid in cradles, which are bedsteads in miniature, and furnished with curtains of white gauze. As many of the infants as can be accommodated are retained in the house, all the others are given out to nurses, and when they reach five years of age are sent to the House of Charity, to remain until old enough to be bound out or otherwise disposed of by the managers. There were fifty foundlings in the hospital, and six hundred and fifty in the House of Charity and in charge of nurses.

The next institution of which I shall make mention is the *Hospicis de Caridad,* or House of Charity. It is a palace in size and elegance, and decidedly one of the handsomest buildings in Cadiz. It has a front of about three hundred feet, is four stories high, flat roofed, built of stone, and adorned in front by rows of pilasters,

of which there is one row to every story; and it has three entrances, one at each end and one in the middle. The latter leads into the court, and is decorated by two columns and a handsome balcony of marble, which rests on their capitals, and belongs to a window above.

Before this entrance is a monument, on the top of which is a statue of the Virgin Mary, holding a rosary in one hand. This monument is a twisted column of marble, finely sculptured, about twenty-five feet high, and having on its base an inscription which expresses the gratitude of the citizens of Cadiz for the singular exemption they enjoyed, through the protection of the Virgin, from the dreadful earthquake of 1755; and states that the monument was erected by them in 1761, to commemorate their remarkable escape from that sad catastrophe.

The interior of this edifice corresponds in beauty with its exterior. It has a court nearly a hundred feet square, paved with tesselated marble, and surrounded by a portico consisting of sixteen marble columns. Beneath the court are the cisterns, which are filled with rain water caught upon the terrace.

In the first story are the chapel, workshops, kitchen, and offices for the clerks and managers. The kitchen is worthy of notice from its having a round chimney in the centre, with an expanded base, which contains five distinct fire places. In the offices are many portraits of eminent divines, and other persons. The upper stories are divided into chambers, school-rooms, banqueting halls, and other apartments, and have entries between them and the court. The apartments are paved with bricks, the entries with these on the sides, and tesselated marble in the middle.

To conclude; this edifice was admirably arranged, and exhibited in every part the greatest cleanliness. At the back of it is the hospital, which is capable of accommodating a hundred or more patients, but it contained only about the half of that number, who consisted of men, women, and children, affected with various diseases. To the east of the hospital are two, extensive, one-story buildings, also belonging to the House of Charity, and like it having a court in the middle. In one of those buildings were the maniacs, who were fifty in number, and in the other the married superannuated paupers, who had distinct rooms, and lived apparently in great comfort.

In the whole establishment there were twelve hundred persons, of whom about five hundred were children of from five to seven years of age. The boys were instructed by men, the girls by women. Finally, this institution is supported at the expense of the city, and has one surgeon and one physician, each of whom receives an annual compensation for his services.

Not far from the House of Charity is the Female Hospital. It is an extensive building with two courts, a small and large one: it is capable of containing several hundred patients, and was arranged in the best manner. The patients were about eighty in number,

classified according to their complaints; and in every respect seemed as comfortable as their condition would permit—their beds, clothes, and wards being neat and in good order. One of the wards was ornamented with two oil paintings; one of our Saviour, the other of Charity. Both were well executed. The principal ward had its ceiling supported in the middle by eight columns of red marble, and at one end had a small chapel, containing an image of the guardian saint. The faculty consists of two surgeons and two physicians, each of whom receives a fixed salary. This institution is likewise maintained by the city.

The next institution claiming attention is the *Hospicio de Viudas*, or Widow's Asylum; which is also a large building, and constructed on a similar plan to preceding one, but differs from it in having only one court, and being divided into rooms of ordinary size, instead of into wards. These rooms open into corridors between them and the court. The upper corridor has its walls decorated by numerous oil paintings, some of which are good, and said to have been done by Murillo, though this I think extremely doubtful, as they are not equal to those of his which I have seen elsewhere. Among these paintings, are one representing St. Peter's denial of Christ; a second, Christ bearing the cross amid his executioners; and a third, Christ raising Lazarus from the dead. There was likewise a portrait of Fragela, the benevolent founder of the institution, who died in the year 1756.

As for the rooms, they were all occupied, but none of them were crowded; not more than two or three persons being in any one of them. Indeed, the whole establishment bore the aspect of its inmates being in the enjoyment of real comfort; and its quietness, order, neatness, and the flowers displaying their brilliant colours in the court, gave it the appearance of being the residence of some opulent citizen.

Hospital of St. Juan de Dios.—This building was originally a convent inhabited by friars of the order of Saint John. It was founded in 1538, but was not appropriated to its present purpose until two centuries afterwards. It is situated near the harbour and in the centre of the city, at the corner of one of the cross-streets and Constitution square: it presents a front of two hundred and forty feet on the former, running back about two hundred feet, and has its church and a part of the city-hall interposed between it and the square. The church is constructed in good taste, and contains some handsome gilded carvings and marble sculpture.

The hospital itself is constructed of hewn stone, and in the usual style of Spanish buildings; having a court, balconied and grated windows, a grand entrance into the court, and stairs leading from it into the upper stories. The court, like that of the House of Charity, is surrounded by a portico of marble columns; is paved with tesselated marble; and has its cisterns beneath. There are two mouths to the cisterns, and each one consists of a huge hexangular block

of marble, bored in the middle, and capped by a massive bronze cover.

The internal arrangements are much the same as those of hospitals generally; and I need merely remark, that the wards consist of two large and a number of small ones, are paved with marble, and have their walls lined for about a third of their height from the floor with blue porcelain, on which are indelibly written the numbers of the beds. Over the head of some of these are fixed in the walls the names of the donors, and the years in which they were presented.

At one end of the principal ward is a handsome altar; and in the middle, on one side, is a large glass case resting on the top of a clock, and containing the skeleton of Blas Duran, who departed this life aged eighteen years, in 1738, and is said to have been the first person who died in the house after it became a hospital. This is quite a good plan for consigning his name to futurity, but his skeleton cannot be an agreeable companion for the patients, who would prefer, perhaps, some less hideous object to gaze at; for Blas holds an hour-glass in one hand, and grinning most horribly upon them, warns them how quickly time passes, and bids them to prepare for death.

This hospital contains both medical and surgical cases; and all the patients are males. They were one hundred and ten in number, but the house can hold many more. It has a surgeon and two physicians; one of whom attends regularly, the other only when called in consultation, or to act as a substitute. Each of the two former receives for his services twenty dollars a month, and pays two visits daily, one in the morning the other in the afternoon.

This institution derives its chief support from the property it possesses. This consists of forty houses in the city; from which it receives an annual revenue of twenty-five thousand dollars. It also receives a considerable sum from seamen and other patients, who have to pay for their accommodations. For each of them fifty cents a day is charged.

The most curious objects in this establishment are a cabinet filled with old fashioned surgical instruments, and paintings lining the entries and corridors which surround the court. The paintings in the latter are fifty-three in number, and consist almost entirely of the portraits of the friars of St. John, who have died as martyrs in different parts of the world. Some of these unfortunate men are represented singly, others in groups, suffering the torments inflicted upon them. Among these persons are twenty-four friars who were butchered, by what are called in the inscription the heretical Cossacks and Swiss in Poland, on the 21st of October, 1696. Another one of the martyrs is the venerable father Diego, who was murdered by the Choctaw Indians in 1637. There are also among these, Miguel and Francisco de Jesus, both of whom were strangled by the Dutch in the year 1636. Others of these distinguished friars might be

enumerated, but as I have already digressed too much I shall continue my notice of the public institutions by speaking of two others, viz., the Military Hospital, and the Medico-Chirurgical College.

Of the former it is unnecessary to say much, as it is similar to the hospital just described, and I will only observe concerning it, that it was founded in 1757, is very extensive, having two courts, one seventy-five, the other ninety feet square, and many large wards, two of which are remarkable for going completely around one of the courts, one ward encircling the other; that is, one next the court and the other to the outer walls. I should likewise remark that this building adjoins the college, is attended by eight of its professors, who perform duty monthly by month, two at a time; that they are assisted by sixteen students residing in the college and hospital, and that the patients consist not only of soldiers belonging to the garrison, but also of English sailors taken sick or injured at Cadiz, a compact existing to this effect between the authorities of Spain and England.

Of the college, also, it is not necessary to say much. It stands in front of the hospital; one end adjoining the latter, the other being on a public square; and it has on one side a yard and on the other a botanical garden. It is a building of moderate dimensions, and contains, besides the lecture-rooms, offices, and cabinets, the chambers of the students attached to the hospital, the library, and the academy of medicine and surgery. The lecture-rooms are small; but as the students are only two hundred and fifty in number, and are divided into seven classes, each having a different hour for attendance, there is room sufficient. The principal cabinets were those containing the surgical, obstetrical, chemical, and philosophical instruments; and among them were found most of those in common use. Some were made in Spain, but most of them in France. Among the surgical instruments I saw Baudelocque's forceps, Dupuytren's arterial compressor, and Civiale's lithotriteur. Speaking of the last named instrument, it may be well to state, that the operation of lithotrity had been unsuccessfully tried in Cadiz, but had succeeded three times in Madrid.

The library contains six thousand volumes of medical, surgical, and other scientific works, which are all well bound and arranged. In the library, likewise, is a portrait of Pedro Virgili, an eminent literary man, who founded the college in the year 1746.

The Academy of Medicine and Surgery is a spacious apartment, ornamented with the portraits of all the kings and queens of Spain who have reigned for about the last hundred years. Dissections are performed in a house standing in the botanical garden. This is small, but laid off handsomely, adorned with bowers, and filled with a great variety of plants, so that the scholars studying botany enjoy every opportunity of learning that science; and the professor, to illustrate what he teaches, has only to walk into the garden, or to direct the plants he may wish to exhibit to be brought into the lecture-room.

The Faculty of the college consists of seven stated and two supernumerary professors; but one more of the latter is wanting. These professors are chosen from the most eminent of the faculty of Cadiz and other parts of Spain; and some of them have served for a long time in the navy. They have different days and hours for lecturing. The former, are all those save the Sabbath and festivals; the latter, from twelve to two o'clock, and from five until seven in the afternoon.

The following is a list of the professors, with the names of the different branches of medicine and surgery taught by them:—

Don Francisco de Flores Moreno, M. D., Practice of Medicine.
Don Jose Benjumeda, M. D., Anatomy.
Don Jose Maria Lopez, M. D., Clinical Medicine and Experimental Physics.
Don Francisco Solano Puga, M. D., Chemistry, Materia Medica, and the Art of Prescribing.
Don Nepamuceno Fernandez, M. D., External Affections, including those of the army and navy and public hygiene.
Don Andres Joaquim Azopardo, M. D., Operative and Clinical Surgery.
Don Jose Gabarron, M. D., Bandages and Medical Jurisprudence.
Don Jose Arboloya, M. D., Obstetrics, Diseases of Women and Children, and Syphilitic Disorders.
Don Francisco Flores, M. D., Assistant to the Professor of the Practice of Medicine.

The above is a correct list, according to the statement given me; but it will be found that the different branches of instruction are not distributed exactly in agreement with what is required by the regulations for the government of all the medico-chirurgical colleges in Spain. However, as the College of Cadiz is constituted on a plan similar to them, other matters relating to it, such as the salaries of the professors, and the laws for its government, will not be spoken of now, but hereafter, when we come to treat of the colleges.

Before concluding my remarks concerning the college, I may observe, that the Academy of Medicine and Surgery is organized as all other academies of the kind in the kingdom, and has twenty-two members. These hold a meeting the first and second Saturday of every month, to attend to the business of the academy. For the performance of duties of a public kind, they divide themselves into committees, viz., one, consisting of three members, for public hygiene; a second, of four, for medical police; a third, of five, for medical jurisprudence; a fourth, of three, for medical topography; a fifth, of five, for vaccination; and a sixth, of three members, for mineral waters. There is also for the duties of subdelegation a seventh committee, consisting of five members. The chief or president of the academy is the royal superior governing junta of

medicine and surgery of the kingdom, and the vice president is Don Ignacio Ameller, professor exempt of the college, master consultor of the navy, and knight of the royal American order of Isabella the Catholic. I will say no more respecting this academy, inasmuch as I shall write of all the academies in Spain under one head; and as this will be included among them it is unnecessary to state anything more about it at this time.

Much more might be said concerning the public institutions of Cadiz; but as the account given is already too long, I will terminate by some remarks on its climate and diseases.

Climate.—Notwithstanding the frequent storms occurring, the salubrity of the air is unquestionably very great. Situated in a temperate latitude, upon the extremity of a peninsula stretching out into the Atlantic, enjoying that equality of temperature peculiarly maritime, having no lofty, snow-clad mountains to throw down their chilling blasts, no marshes in the vicinity to infect the atmosphere with their noxious exhalations, and being fanned by every breeze which blows from the land or from the ocean.—Cadiz may be said to have the best of climates, and most delightful situation. To know what the condition of her citizens is with regard to health, nothing more is required than to look at them, and especially at those of the fair sex. Their graceful, finely proportioned figures, their brilliant black eyes, glossy hair, fair and ruddy complexions, cheerful countenances, and elastic gait, all indicate them to be free of disease, and to have been nurtured in a salubrious atmosphere. They have the traces of Spanish beauty conjoined with those of American, and want that sallow aspect indicative of Moorish extraction, and generally possessed by the inhabitants of Spain and Portugal. Their remarkable beauty, nevertheless, must not be ascribed entirely to the climate; something is due to the plan of the city, the commodiousness of the houses, to clothing, to provision, and the benefit derived from good society, exercise, and amusement, particularly of dancing, of which they are excessively fond, and indulge in no little during cold weather. But during carnival they carry these amusements rather to excess, and, spending most of the night in going from house to house to enjoy them and the masquerades, injure rather than benefit their health. Few cities are more abundantly supplied with wholesome provisions than this; meat of every sort is plentiful and cheap, considering the civil war prevailing; fish of nearly every kind, as the flounder, tunney, hollybut, bonita, pike, and a large one like our rock, but of a reddish colour and with a larger head, are to be found at market every afternoon, in the greatest abundance, unless the weather is so stormy as to prevent the fishing boats from going out in the morning.

The bread used is both leavened and kneaded, and of most uncommon whiteness and sweetness, owing, it is said, to the wheat being picked with the fingers, and freed of every impurity and all

imperfect grains. Of course its making and baking must likewise contribute to its excellence.

In fruits and vegetables the city is quite as well supplied. These mostly come from the main land, and are brought from Port St. Mary. They consist of all the common articles used at table, as pears, apples, peaches, apricots, cherries, oranges, melons, and grapes; and of tomatoes, potatoes, cauliflowers, and other vegetables, all of which are brought to market in baskets, and put up in the nicest style.

Diseases.—From what has been said, it is apparent that their number cannot be great. Those of a serious nature which I saw were continued fevers and small-pox; but they were not at all epidemic; and during the three visits I made to this city it was in the enjoyment of as good health as could be desired, certainly as excellent as any place containing sixty thousand inhabitants in so narrow a compass can reasonably expect.

In the summer of 1837, during two visits to this port, the crew of the United States had the best health; the admissions on the sick list not averaging one a day, and those for trifling complaints, with the exception of a case of scrofula and one of phthisis, both contracted elsewhere, and two slight cases of continued fever. During the last winter, however, there being a good deal of rain and stormy weather, and the crew having been much exposed, the number of admissions averaged nearly two a day; but thirty-one of these were for catarrh and eight for bubo. The other cases were, with a few exceptions, unimportant, and included surgical complaints.

During the two visits paid in the summer it rained only twice, and the thermometer varied from 68° to 79°; that is, from 68° to 71° in the month of June, and from 71° to 79° in that of August; the average in the first instance being 69½°, and in the second 75° of Fahrenheit. During the last visit, that is in the winter, the temperature averaged 55° in January, and 58° in February. Rain fell in greater or less quantities in nineteen out of forty days; but this was an uncommon occurrence, the weather being unusually bad, and we may, notwithstanding this and what has been said above, recommend Cadiz, not only for the healthiness, but also for the agreeableness of its climate. There the invalid can have all that is desirable to restore him to his pristine vigour, and at the same time can partake of such amusements as are best suited to keep him from desponding, and least calculated to be detrimental to his health; or should these cease to interest him, he can easily transfer himself to St. Mary's to witness its bull-fights; or should he be too humane to derive pleasure from these horrid scenes of bloodshed, he may proceed to Xeriz, ramble through its immense vineyards, feast on their delicious fruit, see the mode of preparing sherry wine, and go through the magnificent store-houses in which it is deposited.

GIBRALTAR.

Although this place is a part of the British dominions, I shall, for the sake of preserving order, treat of it as still being a portion of Spain,—to which it belongs geographically.

This celebrated rock and fortress have been so often described, that it would be superfluous for me to give a detailed account respecting them, and I shall therefore be as concise in my remarks as need be.

Gibraltar, the Mons Calpe of the ancients, is said to take its present appellation from Tarif Abenzeria, the Moorish general who landed there and fortified the place in the year 714, naming it *Gibel Tarif*, or Tarif's Mountain.

Approached from any direction—east, west, north, or south—it forms a most conspicuous object, and from each direction bears a different form and appearance. Viewed from the north or south its form is pyramidical; from the east it seems to be a jagged, barren, perpendicular rock, which is perfectly uninhabitable to man or beast; and from the west, an irregularly inclined plain, partly formed of rock, partly of earth, and covered at its lower part with habitations and fortifications. But when it is seen from the north-west, it then appears in its outline a stupendous, coarsely sculptured statue of a lion, couched with the head resting on his forepaws, and facing the north. This likeness to a lion is perceptible at once, and greatly increases the admiration and sense of awe experienced by us when we behold this famous fortress.

The Rock itself is one of grey secondary limestone. It is somewhat less than three miles long, is three quarters of a mile broad at the widest part of its base, forms a serrated edge at top, and has three points much more elevated than all others. These points are the rock mortar, or its highest northern part; the point on which the signal-house stands; and the sugar-loaf, or its southern point, on the top of which are the ruins of the tower termed O'Hara's folly, from its having been built by him to overlook Cadiz. The first point is 1350 feet high, the second 1276 feet, and the third 1439 feet. The height, however, of these points is deceptive, and persons from oftener viewing them from the northward, generally believe the rock mortar to be highest, being deceived by the perspective. When they are looked at from the east or west, the person being in a line with the middle of the Rock, the most elevated of them can be easily ascertained.

The rock mortar overlooks what is called the neutral ground. This is a very low, level, and sandy neck of land, uniting the Rock with the Continent, and evidently nothing more than a sand bank, which, having been formed by the washing of the sea, has converted the Rock from an island into a promontory. The neutral ground is rather more than a half mile wide next the Rock, and gradually increases in breadth as it approaches the main land.

It takes its name from the Spanish and English lines of sentinels being stationed upon it, and is covered by a considerable number of buildings belonging to the two nations. Among those of the English are the devil's tower—a solitary, deserted one of stone, overlooking the rest; the slaughter-houses, wherein all the meat used by the garrison is butchered; and a large number of low framed houses, forming several villages.

Of the excavations and fortifications every one has heard, and I will not describe them, but will merely observe, that those at the northern end of the Rock far exceed all others; and the stranger is seized with wonder when he beholds the deep moats, the lofty walls, interposed between the town and neutral ground; when he sees the inaccessible batteries crowning the summit of the rock mortar, or displaying their embrasures in the face of the vast precipices beneath, and from the interior of the Rock through which they have been excavated. However, in approaching Gibraltar the first time, I was somewhat disappointed in the appearance of the fortifications, for though they are so immense much of them is hidden, and a person does not become fully aware of their extent until he has examined them closely.

At the south end of the Rock, called Europa Point, is the Governor's cottage; and upon the east side of the former are a small cove and the village of St. Catharine, which is on a sand bank at its foot, and consists of a few houses chiefly occupied by fishermen. The cove is called St. Catharine's Bay.

Upon the west side are the town, barracks, hospitals, parade ground, magazines, moles, dock yard, fountains, tanks, a number of cottages and gardens, and a great many stairs, foot paths, and roads traversing the Rock in a zigzag manner. On this side, likewise, about one-third the distance from the top to the base of the Rock, is the cave called St. Michael's by the English, and St. George's by the Spaniards. This cave has an expanded mouth, is lined with stalactites, and of very great but unknown depth. By some persons it is said to be five hundred yards deep, but this is uncertain, it being very difficult to explore the cave for that number of feet. The descent after getting a few yards down is decidedly dangerous; for during last September two soldiers of the forty-sixth regiment were killed in making it, both having fallen down a considerable distance. One suffered a comminuted fracture of the leg, besides other injuries; the other a fracture of the spine. The former died in four, the latter five hours after the accident. By some it is thought that this cave extends from Gibraltar, beneath the sea, to the coast of Morocco, and forms a passage for the apes to go from one continent to the other; but this opinion is absurd and has no other reasons for its foundation, than the great depth of the cave, and the apes not being visible at all times: and is not more probably true, than that the river Alpheus, in Greece, runs beneath the sea, and discharges its waters at the fountain of Arethusa near Syracuse. To prove the correctness of this opinion there are two

facts of quite as much weight as those advanced for the support of the other, viz., the Alpheus flows into the sea, and the fountain discharges a stream of water of almost equal size. Moreover, if assertion were to be taken for facts, there is another one more weighty than these: things thrown into the river come out of the fountain, a fact to be as well substantiated as that a monkey let loose at Gibraltar can find his way to Apeshill, the other pillar of Hercules on the African side. The truth in the two cases stands thus, and I am sure no one can doubt it: monkeys are seen on the Rock of Gibraltar, and also on Apeshill; and fresh water is found both in the Alpheus and in the fountain of Arethusa.

Climate.—This resembles that of Cadiz, and of the Mediterranean in the same latitude. The same winds prevailing, rain falling at the same seasons, and in like quantities, and the temperature of the air being about the same; but of course this must vary according to the place where the thermometer is put, whether at the foot, or at the top of the Rock, or at a medium height; or whether on the water, or on shore; and within or without the town. It is often cool and pleasant in the harbour during hot weather, and excessively sultry and disagreeable in the town; and the reverse of this happens during cold weather.

The most prevalent winds are the easterly and westerly. The latter are always attended with fair weather; the former with mist, clouds, rain, and sultriness, unless they incline to the north. When the wind blows from the east or south-east it is called a Levanter, is damp and warm, and invariably preceded by mists overhanging and obscuring the Rock and the mountains adjacent. This wind is often violent; striking the Rock with great force, and, being divided into currents by its jagged summit, it descends with the utmost fury, causing whirlwinds, water-spouts, and whirlpools, and putting the ships at anchor and those under sail in great jeopardy. Vessels have been capsized repeatedly in both these conditions. An instance happened just before I was last there, which, from the singularity of the circumstances attending it, deserves to be mentioned. A felucca under sail, and midway the bay, was struck by a whirlwind, upset and sunk, leaving all her crew to the mercy of the eddies and currents. Most fortunately for them, at the very instant of the accident, the boats of two French men-of-war, bound for the Antilles, but which had stopped at Gibraltar to bury the captain of one of them, who had drowned himself, were returning from the funeral, and on seeing the accident hastened to their assistance, and succeeded in saving every one of the crew. Thus the drowning of one person providentially prevented many from sharing a like fate.

Botanical Productions.—Gibraltar has few indigenous plants; nearly all being exotic, and brought there from the main land.* By the formation of an artificial soil, however, vegetables are raised in considerable quantities; such as potatoes, cabbages, tomatoes, and

* These two words, "indigenous" and "exotic," are used in relation to Gibraltar only, and not in relation to Spain.

artichokes; and likewise fruits, as lemons, oranges, apricots, figs, plums, almonds, peaches, and strawberries. The prickly pear is most abundant, the arid rock being well-suited to its production. Flowers are found in every garden, and particularly geraniums, which are very beautiful, grow to great size, and are so plentiful that they are made into hedges.

Some medicinal plants* are to be met with. These are the *datura, stramonium, cucumis agrestis, ricinis communis, scilla maritima,* and *papaver somniferum;* but they are scarce, and to be regarded as curiosities.

Zoology.—Besides the ordinary domestic animals few others are to be found. Foxes are said to live on the Rock, but I have never seen one; and the apes, so often spoken of as its inhabitants, are seldom met with, though it is well known that there are two species of them, which live entirely distinct, and hold no intercourse with each other, appearing to have a natural antipathy, or certain prohibitory laws, which keep them apart. They subsist on grass and roots, are excessively devoted to their young, and when they die most carefully conceal their remains. The young are now and then caught and tamed.

Birds.—Vultures, eagles, and hawks, are seen occasionally hovering over the Rock; and larks, thrushes, sparrows, swallows, and red legged partridges, are found upon its uninhabited parts, but none are numerous.

Fish.—Being so well situated—having a large bay on the west, into which the current from the Atlantic is constantly pouring, and driving before it myriads of fish; and having the Mediterranean on the east, forming another bay, down which a counter current is sweeping them back—the fish market is excellent, and a great variety of the finest fish is supplied, as the tunney, turbot, bonita, and sole. The crustaceæ are likewise to be had, as the lobster, craw-fish, and shrimp. Among the most common fish are the pilot and mackerel.* Both are to be caught in great numbers alongside vessels at anchor, and particularly the latter; the eating of which is frequently followed by poisonous effects. I do not know that I have ever visited the place without having some patient who was made sick in this manner. The mackerel whether fresh or salt causes the same symptoms. These are high fever, a flushed face, inflamed eyes, violent head-ache, and gastric disorder, with a sense of internal heat, continuing for a longer or shorter period according to the person and the treatment. The most effectual remedy was an emetico-cathartic, of tartrate of antimony and sulphate of magnesia. The cause of this fish poisoning is unknown, some ascribing it to its feeding on copper banks, others to its eating the medusa or sea nettle. Nothing injurious or unnatural is to be discovered in its flavor or appearance, and the effects may be caused simply by its indigestibility.

* For a particular account of these, see Hennen's Medical Topography.
† See Plate I., fig. 3.

Town.—This is situated partly on a plain to the north-west of the Rock, and partly on its declivity; the houses on the latter rising one above the other at such a difference of elevation that the lowest story of one is often on a level with the highest story of the next house below. The buildings being painted of various colors—red, yellow, green, white, and presenting their fronts in regular files, show off to the best advantage, add much to the beauty of the town, and make it appear much larger than it really is.

Including the garrison, and all persons living without its limits upon the Rock, its population is estimated at twenty thousand, consisting of Spaniards, Moors, Jews, English, and many more nations. Its houses are of stone, and plastered; usually several stories high, and well built. The streets are narrow, well paved with pebbles and hewn stones, regular on the plain, irregular upon the declivity, and kept in the nicest order; no filth of any description being permitted to lie in them, either from private or public buildings. The same cleanliness is observed in other parts; the squares, markets, yards, and moles being freed from every thing offensive. With regard to the markets the greatest attention is paid. No offal is allowed to be thrown about them; the meat offered for sale is butchered the day before on the neutral ground—no animal being slaughtered within the garrison—and it is brought to market the next morning in large carts, with high, and round tops, which allow the meat to be hung up, and prevent it from tainting by contact.

Neatness is observed likewise in the houses; but these not being subject to the same inspection from the police, those of the poorest class are frequently dirty inside and out, being much crowded, illy-constructed, very small, and huddled together on the steepest parts of the declivity.

The quarters of the officers are both within and without the town, and are mostly large and handsome buildings. The principal barracks are the Rosia and Pavilion. They stand south of the town above the dock yard, and are very extensive. They are built of the same materials as other edifices, present an expanded front to the bay, and appear so many distinct palaces. Next them are the principal gardens and the chief cemetery, situated in a hollow; and between them and the town is the parade ground—a slightly inclined, sandy plain, encompassed by aspin, acacia, and other trees, and forming a square; having a circumference of about eight hundred yards. Extending along the water battery: and between it and the parade ground is the alameda—forming a delightful walk. Overlooking these places are several summer-houses hid among trees and shubbery, adorning the neighbouring paths and gardens. Near these summer-houses is the statue of General Elliott, who distinguished himself so much during the last and celebrated siege, and that of Neptune, which was the figure head of the St. Juan, a Spanish ship of the line, of one hundred and twenty guns, captured by the English. Both of these statues are of wood, but well worthy of notice. That of Neptune is admirably executed. It is of colossal size, represents

him naked, with his muscular limbs well displayed, and his trident plunged into the head of a fish at his feet. This statue is highly prized, and carefully preserved by paint. To show it to advantage it is placed over a ravine, across which is thrown a rustic bridge, much used by persons rambling about the gardens, and passing to and from the town.

Hospitals.—There are two of them; the Civil, and the Military—formerly the Naval Hospital. The former stands above and at the back of the town, and commands a fine view of the bay, the Coast of Morocco, and the mountains and valleys of Andalusia for many miles in extent. It is two stories high, made of stone plastered over and painted yellow, has three small courts within, and a yard in front filled with orange trees. It is divided into distinct wards for Jews, Christians, and Mahometans, and rooms for different purposes, and contains a museum of curiosities belonging to the animal and mineral kingdoms. Among the former are a number of preparations of the human body. This institution is supported by taxes, and quarantine fees, and has a surgeon, purveyor, dispenser steward, &c. and other necessary persons, all of whom have fixed salaries; the largest of which is the surgeon's. Every part of the establishment is in good order, being neat and well regulated. It is capable of accommodating a hundred patients. Strangers of respectability are received and furnished with every thing wanted, but they are charged proportionally to the expenses incurred on their account.

The Military Hospital is situated adjacent to the dock-yard, beyond the Rosia barracks, and upon a level space upon the side of the Rock. It is constructed of the same materials as the Civil Hospital, but is after a different plan, having only one court. This is of large size, being about sixty feet wide and one hundred long, and has a corridor around each of its two stories; these communicate by stairs, at the corners of the corridors. The first story is divided into many apartments, appropriated to various purposes; the second into wards and dispensaries, which are placed at the corners of the building. The wards are eight in number; they are well lighted, and are ventilated by wooden valves in their ceilings, which are formed by the roof itself. There are two valves to every ward, and all of them are worked by ropes extending to the floor. These valves when opened discharge the foul air through small Venetian cupolas standing over them, and upon the highest part of the roof. Each one of the wards has a fire-place and plank floor, and is large enough for forty patients, so that the hospital can hold three hundred and twenty. Some of the rooms in the first story being used as wards, the whole house might accommodate five hundred patients very conveniently. Every patient is furnished with an iron bedstead with a sacking bottom, a mattrass, sheets, coverlet, and pillow. When any one is not confined to bed, and has no immediate need of it, it is carefully rolled and lashed up, and put on the foot of the bedstead for the day. All the patients are dressed in the same

manner; wearing white night caps, white flannel wrappers, and leather slippers. At the time of admission they deposit their uniforms in the store-rooms, and wear the hospital dress until they are discharged.

Upon the wall at the head of each bed is hung a small tin frame, containing a card, on which is written the name of the patient, the number of his company, the time of his admission, and his disease. The sick of the different regiments, of which there are five, are in separate wards; and those of the forty-sixth one were on the east side. Among them were some affected with remittent fever, and six with purulent ophthalmia, with which this regiment had suffered much, thirty of them having been under treatment for it in the last quarter. The six cases were all violent; in one, that of a soldier beyond the meridian of life, opacity existed throughout the cornea of the right eye; the lower lid of which at its inner part was ulcerated for two or three lines in length and a line in breadth, and looked as if it had been cut off, which caused me to inquire when I first looked at him if this had been done. Dr. Galliani, the surgeon of the forty-sixth, said that all the cases were caused by stationing sentinels on that part of the southern declivity of the Rock called Windmill Hill, where they were much exposed to night air, the sun, and to the southerly winds, which are highly charged with sand. The most efficacious remedy, the doctor stated, was the nitras argenti in solution, in the proportion of twenty grains to an ounce of water, applied to the eye.

For the support of every patient the government allows nine pence, or eighteen cents per day; which sum is amply sufficient, as thirty-eight pounds sterling remained as a surplus of the last quarter. The provisions wanted are supplied by the purveyor, who is given a list of what are required the day before they are to be used. At the termination of the quarter he sends in his bills, which having been approved by the surgeon, and certified by him to be correct, are paid by the commissariat, who holds the funds. There is an account sent to government, every quarter, of the provisions served out, the money expended, the quantity of medicines used, and how much remain on hand; and of the number of patients who have been leeched. For the leeches there is a distinct bill, specifying the persons on whom they have been applied. The expenditure of all other articles is put down on a sheet of paper after a certain form, of which two copies are sent out quarterly. The duplicate is kept by the surgeon.

To avoid mistakes, and to let every patient know what food is directed for him, a diet list is made out daily, and also on a sheet of paper, which is put into a frame and hung up in each ward for inspection. The names of all the patients are put down on this list in regular order, and opposite them on the other side of the paper the diet, which is of three kinds—full, half, and low. Each kind has a separate column; at the head of which it is placed. Accordingly as he is to be dieted, a mark is put opposite the name

of each patient in one of the three columns. Full diet is a half pound of beef, part of a fowl, a pound of potatoes, and a quart of tea, per day; half diet is the half of these quantities; and low diet is one of farinaceous articles.

For medicines, and other articles wanted by the surgical department, there is a store-house for all the regiments, from which they are given out by requisition. Instruments of all sorts, used in operating, are said to be furnished by the surgeons. This has two advantages; a selection of those most approved by them, and a great saving to government. The medicines, lint, plasters, &c., were kept both on the shelves and in the drawers of the dispensary, and also in a chest used in active service. This chest consisted of strong boards well planed, bound by iron plates, having a top with lock and hinges, and divided within into different compartments to suit the articles contained. These compartments formed layers resting upon each other, and made moveable; so that when any thing was wanted at bottom, it could be obtained without disarranging things at top. While speaking of this chest, it may be well to observe that a similar one is used for sending supplies from England to the surgical departments of the Navy; and that to save room all the bottles are of a square form and of a fixed size.

For attendance on the invalids of each regiment there are a surgeon; two assistant surgeons, who are on duty alternately; two male nurses; and a sergeant, who acts as steward, keeps order, and attends to the food and clothes, and to the cleaning of the wards. To prevent the patients from leaving the hospital without permission, sentinels are stationed at the gate and around the premises. Elopement, however, is rarely attempted, the hospital dress causing instant detection.

Overlooking the hospital, at the distance of a hundred or more yards, is the private residence of the surgeon, Dr. Galliani, who has choice of living there or at the hospital. As a matter of comfort he prefers his present location; and goes to see his patients every morning and evening. Dr. Galliani, is a man of high standing as a surgeon and gentlemen, and is an Italian by birth. He has been twenty-six years in service, and at the expiration of thirty years will have the privilege of retiring on a pension of fifteen shillings a day for life, to enjoy that rest and tranquillity to which his long and arduous services entitle him. Such liberality on the part of the British, or any other government, must induce every officer to serve it faithfully in the prime of his life, so that when advanced in age and desirous of repose, he may have his wishes gratified, and although unemployed have a comfortable subsistence. This regulation is indeed the best policy; proving of the greatest benefit to the government, and holding forth the most tempting reward to the officer to continue in its service, and to perform his duties willingly and punctually.

Thus taken care of when advanced in life, when worn out with

toil and too decrepid to serve, no officer will fail to support such a government, nor love the country to which it belongs.

Diseases.—From personal observation of these I cannot speak positively, but, according to the statements of others, there appear to be none peculiar to Gibraltar, those prevailing being found as common elsewhere; such as measles, scarlatina, complaints of the alimentary canal, pulmonic affections, and fevers, of which the bilious remittent is the most common: it has from time to time committed great havoc in the garrison. While last there I saw the graves of two of the officers who had just died of this fever: but they were said to have contracted it by travelling into the interior during very hot weather.

Whenever I visited the place, the crews of the two ships enjoyed excellent health, and were affected by no disorders ascribable to their being there.

I think, then, that Gibraltar may be properly called a healthy place; and that we should attribute this to its peculiar position, the mildness of the climate—it being in a great measure free from the causes of malaria—and to its excellent police. Its exemption from contagious and infectious diseases may be rendered greater by the quarantines imposed on vessels from ports where they exist; but nevertheless these are often as great nuisances here as in the south of Europe generally. As an instance of their absurdity, I will mention a circumstance which was told me by a gentleman of the greatest veracity, who was directly concerned in the business.

The ship Leonidas, of New York, on her way from Porto Rico to Trieste, when near the Straits met with another vessel, and in attempting to speak ran afoul of her. Both vessels were much damaged; and the Leonidas having carried away her bowsprit and fore-top mast, put into Gibraltar in distress, and to repair the damage received. When she got into port, she was neither given *pratique* nor permission to remain in quarantine, but was ordered to leave the port. The American consul, Mr. Sprague, having interfered in her behalf, the board of health gave her the alternative of remaining at Gibraltar forty days in quarantine, or after repairing damage, of going to a port where there was a *foul* lazaretto, riding out the quarantine there, and paying in the interim the expenses of the workmen employed and taken aboard. The master resolved to take the last alternative, and accordingly got three carpenters aboard, having agreed to carry them to Trieste after the vessel was repaired, to pay their charges, and to bring or to send them back to Gibraltar. This I consider one of the grosest abuses of quarantining which has come under my notice. A vessel crosses the Atlantic from a port more than 3000 miles distant, receives an injury, puts into another port in distress, and when needing every indulgence is thus harshly treated and quarantined; while vessels arriving from Tangier, only a few leagues off, laden with wool, provisions, and other articles, are allowed, daily and hourly, at once to hold communication. The consul wrote to our minister, I understood, on the subject; and

was endeavouring, when we left, to get the evil remedied. The reasons assigned for such a gross abuse of quarantine, I understood, were, that the English government would not allow the board to do otherwise; and that they were obliged to do at Gibraltar as at other ports in the Mediterranean. The first reason is without weight, as it is well known that the government has given them permission to adopt such quarantine regulations as are required. As for the second reason, it must be granted to be of some force, and to justify in a degree this abominable practice, although it is contrary to the best interests of commerce, and exceedingly inconvenient to all persons who are so unlucky as to be suspected of being impregnated with the virus of some dreaded disorder. It is to be hoped that our consul has succeeded in effecting a change; and that in future no American or other vessel will be received in the same inhospitable manner, when in distress, as that of which the Leonidas can justly complain.

ALGESIRAS AND MALAGA.

The first of these places is a town of ten or twelve thousand inhabitants, on the western side of the Bay of Gibraltar, and five miles from the Rock. It has some trade, but chiefly, it is thought, of a contraband kind. Certain it is, that smuggling between it and Gibraltar is carried on more extensively and openly than I have seen elsewhere. This town has a white and neat appearance at a distance, and the country about being very fertile its inhabitants live apparently comfortable and contented. They subsist in great part by agriculture, going out in the country in the morning to till their farms, and returning to town in the evening. This is a custom throughout this part of Andalusia; and is indeed a common one in Italy and southern Europe generally; very few of the husbandmen living in cottages on the land. Olives, wheat, and grapes are the chief products, and are raised in large quantities; but, nevertheless, from the disturbed state of the kingdom, the second article of late years has been so dear that much of it is brought from the Black Sea to Gibraltar, thence in the evening is taken from the vessels bringing it, by small boats rowed usually by one or two men, and smuggled across the bay to Algesiras.

Of this place I have nothing of interest professionally to say; it having no medical institutions, Its climate and diseases are much the same as those of the parts of Spain already described.

Of Malaga no more can be said than of Algesiras; for although it is a city containing 80,000 souls, yet it has no medical institutions, no museums, no libraries, and no hospitals, worthy of description, or even of being named. The civil hospital is a small, illy-constructed building, is badly regulated, and contains a very small number of persons. The streets are mere alleys, generally irregular, and not remarkable for cleanliness. The private houses are like those of Seville in most respects. The only two public edifices

meriting notice, are the Aduana, or Custom-house, formerly the tobacco manufactory, which is a fine building, forming a square of common dimensions; and the cathedral, a gothic structure of immense size, and deserving from its architecture, the manner in which the work about it is executed, the name of elegant and magnificent. It is so large, that in approaching the city from sea it appears out of proportion to all the buildings around. Its length is more than three hundred and its breadth more than two hundred feet. Its height corresponds: one of the steeples, that which is finished, having an elevation of three hundred and twenty-seven feet. This steeple was completed in 1779, and is made, as the rest of the building, of hewn limestone, worked in the finest manner; and from its top commands a splendid view of the adjacent country.

PRESENT CONDITION OF THE PROFESSION OF MEDICINE IN SPAIN.

Judging from what I have seen of the medical men in Spain, I do not think them worthy of the odium and disrepute under which they suffer in other countries. It cannot be denied that they are, and have been for many years, behind the members of the profession of several other kingdoms of Europe in improvement; that they have made few discoveries in the nature and treatment of diseases; in the proper method of curing wounds, fractures, and other injuries; or in the construction of instruments and apparatus; or in chemistry, and other collateral sciences. But, still, they are not as unskilful and as illiterate as they are represented; and whether they are deservedly so or not, it is certain that they possess great respectability and influence with all classes of society. Indeed, it is not a little surprising, that, amid all the revolutions, and many disturbances which have taken place of late in the kingdom, its faculty have been permitted in a great degree to remain in a comparative state of tranquillity; and while the members of every other profession have been retrograding, and the all-powerful priesthood have been reduced to the lowest condition, that they have continued unchanged, and have maintained themselves in all their pristine prosperity.

It appears to me that one of the principal causes of the disrepute in which the Spanish faculty is held by their brethren, is the very small compensation they are said to receive for their services. Their compensation, measured by a foreign standard, is truly moderate and inadequate, but in reality is not so much so as believed; for in the first place, their fees being low, they are oftener employed; and in the second they are paid in cash, so that they do not from having long accounts, and numerous charges against their patients, appear to be in the receipt of very large incomes, and yet have in fact very small ones, as is the case in the United States and other

countries, where accounts are kept for professional services rendered. Moreover, the Spanish physicians enjoy very great advantage in this respect, that they have none of their practice taken away from them by quacks, and the unlimited sale of nostrums; for neither the former nor the latter are permitted—laws existing, for the suppression of all such nuisances to the profession and to the public.

From the Spanish faculty partaking in a great measure of the reserve peculiar to the nation, I was not able to learn as much of them as otherwise I should; but from what I could observe, they may be said to be polite and dignified in their manners; as well, if not better informed than any other class of men in Spain; and in their profession much more practical than theoretical; being little given to writing. In this respect they are extremely singular, for an original professional work is nearly unknown; and even to periodicals they seem to have an antipathy: for, according to what I could learn, the only one published is in Madrid, and this has so limited a circulation that it was impossible for me to obtain a single copy. For recent information they rely almost exclusively on French publications, and chiefly on the periodicals published in Paris. The only English works I met with were those of Cullen and other medical authors of about the same period. These works were mostly translated into Spanish. Of those by American authors I met with none; and the Spanish physicians seem to be acquainted with few of even the most celebrated of them. Finally, in consequence of the perusal of French publications, Spain having been so often over-run by their armies, and many of the Spanish faculty having been partly, if not altogether, educated in the medical schools of France, their practice appears to be chiefly that of the modern French school, though it still partakes considerably of the ancient practice in Spain and other parts of Europe.

Having given this sketch of the profession of medicine in Spain, I shall proceed to communicate such information respecting the laws for its government, its institutions, and other subjects connected with it as I was enabled to gather. The information given has been in great part derived from the perusal of publications made with the sanction of the crown for the government of the faculty, so that it is as correct as it was possible to obtain. Though much of it is unimportant, and may afford little useful instruction; yet other parts may prove interesting and amusing, especially those respecting the medico-chirurgical colleges, and the ancient ceremonies observed in them.

THE ROYAL ACADEMIES OF MEDICINES AND SURGERY.

Among the most useful institutions in that kingdom are these academies; and to Ferdinand the Seventh is chiefly due their establishment on the present efficient plan; for under his patronage they obtained the eminence which they now possess. Several decrees were made by him for their benefit; the principal of which were that of June 10th, 1827, and that of August 31st, 1830. Agreea-

bly to those decrees, the royal superior governing junta of medicine and surgery, composed of the three physicians of the royal chamber, was appointed the chief of the academies, in place of the Minister of Grace and Justice, who had been their director and patron.

The junta suggests, and recommends to the government for its approval, any variations and additions required by these regulations; nominates subdelegates to the districts; forwards to government the petitions and other communications of the academies or their members on subjects relating to them; inquires into their condition, and enacts such laws for them as are thought necessary. It calls extraordinary meetings of a portion, or of all the academies, fixes and varies the number of members, expels and deprives of his title any unworthy one, grants medals, and annually renders to government an account of the taxes destined for the preservation and prosperity of the academies. Finally, the junta makes known to government any of the members who are thought on account of their services deserving of pensions, and communicates to it any thing relating to the academies, deemed worthy of its attention.

The number of academies established in the kingdom are ten, viz., that of Madrid, for New Castile; that of Valladolid, for Old Castile; that of Corunna, for Galicia and the Asturias; that of Seville, for the upper part of Andalusia, for Cordova, and Estremadura; that of Cadiz, for the lower part of Andalusia; that of Grenada, for the kingdom of the same name, Jaen, and Murcia; that of Saragossa, forArragon; and that of Palma-Majorca, for the Balearic Islands.

The academies then are not as numerous as the kingdoms—Spain being composed of fifteen of these—and do not limit their authority exclusively to the kingdoms wherein they are situated. For instance, as may be seen above, the Academy of Grenada has control over it and also over Jaen and Murcia; the former of which belongs to the kingdom of Andalusia.

Moreover, the academies are distributed irregularly in another respect; for Seville and Cadiz, both of which belong to Andalusia, have distinct academies.

In the different provinces the academies have subdelegations, in districts with which a strict correspondence is maintained.

The academies are ranked according to seniority, are required to consult the junta on all important subjects thought deserving of its attention, and make known to it whatever occurs in the districts of the subdelegations.

The members of the academies are divided into three classes—ordinary, aggregates, and correspondents; all of whom are ranked at their meetings according to seniority. The ordinary vary in number proportionately to the *medico-cirujanos*, the physicians, and Latin surgeons, of the capitals where academies are established. Two-thirds of the ordinary members in every new academy are appointed by the junta, and these elect the other third, by a secret vote. Any person who aspires to be an ordinary member, is required

to present a memorial to the academy of which he wishes to become a member, through the secretary, and at the same time to furnish recommendations. The academy, thereupon, appoints a committee to examine the documents, and to learn the habits of the applicant. If the investigations prove satisfactory, the aspirant delivers a memoir or dissertation, composed in Castilian Spanish, upon any subject he may choose, provided it belongs to the branch to which he aspires. A committee having been appointed the memoir is examined. If it is approved, the aspirant reads it publicly in the academy. Afterwards, any number of the members, not exceeding five, can make any remarks they may think fit respecting the memoir; and then a secret vote is taken about his admission. Should he be elected, he receives notice of it, takes a seat at the next meeting, and has his seniority reckoned from that time.

The ordinary associates are obliged to reside in the place where the academy is situated, and lose their titles should they remove elsewhere; but when they return can re-assume them. However, they never regain their seniority.

This class is the only one having the right of suffrage on all subjects introduced at the ordinary meetings, unless a member of another class should be invited to instruct them; and in that case the member invited can vote on the subject.

The professors of the royal colleges of medicine and surgery, those of medicine in the royal universities, and the examiners of the subdelegation of the academies are, *ex-officio*, ordinary associates in the places where the academies are situated.

The class of aggregates are subdelegates residing in the districts which have academies.

The associate correspondents are all those persons who send interesting notices relative to the science and its auxiliary branches. Any one who fails to correspond for two years loses his title. The three classes of associates are appointed from the three branches of the profession; that is, from the *medico-cirujanos*, the physicians, and the surgeons. Every associate is liable to expulsion for bad conduct, when reported to the junta; but if sickness or advanced age prevent him from the discharge of his duties he retains all his distinctions. When one removes from the place wherein his academy is located, he can be initiated into that of the place to which he removes, and remain a correspondent or a subdelegate to the former academy.

The Academicians enjoy the privileges of the *servants* of the royal chamber, and are reported as such to the junta, their president, and to the major domo, for his recognition and other purposes. The ordinary members and aggregates have a particular uniform; are *ex-officio* members of a body governing a hospital, a house of charity, one of seclusion, or of imprisonment. Every associate receives from the junta such compensation as it thinks compatible with the funds appropriated for the academies, and he is preferred in promotions to any person not an associate. For the first five years after the establishment of an academy, in order that the funds may accumulate, no

compensations are made. If any associate whatever of the three classes should write and present a literary work to one of the academies which the junta or academy approves, he receives a medal; signifying that it is a gift from his sovereign for surpassing merit in medicine. The ordinary associates are required to attend punctually all the meetings. These are of three kinds; stated, special, and general. The first are held every five days: and at them the members speak of prevalent diseases; read memoirs and notices presented the academy; discuss any medical or surgical subject, or any point in the collateral sciences; and deliberate upon economical and administrative matters. When thought necessary, committees are appointed for any business connected with the institution, and for the nomination of a person to deliver an eulogium on any deceased and meritorious member.

There are standing committees for certain purposes, viz. for public hygiene, medical police, legal medicine, medical topography, vaccination, mineral waters, &c. To each committee are a chairman and a secretary. The former appoints the place and hour of meeting.

The first stated meeting of the academy takes place on the second of January, when the ordinary associate whose turn it is delivers an inaugural oration. The session begun, any member losses his emoluments who does not attend a quarter of an hour after the time fixed for the meeting.

The aggregates and correspondents are permitted to assist at the stated meetings, to read any discourse on the subject in consideration, and to give information of prevalent diseases, but they have to retire when administrative subjects are to be discussed.

The special meetings occur at any time of the year the royal superior junta, or the vice-president, may think necessary. Before it occurs notice is given by a bill of the time and place, and the object, unless it is to be kept secret. In these meetings they treat only of the subjects for which they were called. The members are the ordinary ones alone, if the subject is economical or administrative; but if this be professional or literary, the meetings are composed of all the academicians.

The general meetings are held whenever the royal junta or the academies deem them requisite from the great importance of the subject to be considered. If necessary, the subdelegates or aggregates attend these meetings, notice having been given in due time; and any person not attending them for the fourth part of the time they take place in any one year, loses all his distinctions, privileges, and compensations; unless he have been sick or engaged in the service of the sovereign.

Officers of the Academies.—They are the vice-president, secretaries, and librarian, or archive-keeper. They are elected from the ordinary members chiefly, and hold their offices for two years, at the expiration of which time they have substitutes or, they are re-elected. If unwilling to serve again they can refuse to do so, having given

satisfactory reasons for refusing. Their expenses and salaries are paid from the funds of the institutions.

The vice-president maintains good order at the meetings; convokes extraordinary ones on matters of importance; proposes subjects of deliberation; publishes resolutions; takes care of the punctual observance of the statutes and decrees of the academy; and commands, provisionally, what he thinks proper for good order and government. He signs letters, titles, and warrants, and performs any other duty assigned by the regulations.

There are two secretaries; one for reading, the other for foreign correspondence. The former gives out notices of the meeting; keeps the papers and seal; takes the votes; and has charge of all the books of record. The latter attends exclusively to correspondence with different foreign bodies and individuals, and translates into Spanish, if necessary, papers remitted by them. His other duties are all relative to these; such as making out degrees or honorary letters for strangers, and keeping the books and documents respecting them. These secretaries employ clerks if needed, and receive a compensation double that of the other associates.

Business of the Academies.—These are chiefly the promotion of public health; making observations on diseases, especially contagious and epidemic ones; advancing the science of medicine, and promoting the interests of its professors. They likewise make experiments to ascertain the efficacy of new medicines; publish essays on the most interesting medical subjects; criticise professional works, and collect materials for the formation of a history of Spanish medicine and surgery, and for periodical publications.

If any associate announces to an academy a discovery, he is called on to prove it before the meeting, or a committee appointed by it; or he must produce papers to give credit to the alleged discovery. No associate is allowed to publish the discovery of another without his consent or that of the academy.

Should a member desire to publish any work, and should not have the funds wanted, it is published at the expense of the academy, which receives the profits arising from its sale until reimbursed, and then it delivers to the author or translator the copies remaining on hand. The academies are occupied also in the examination of physicians, midwives, and bachelors in medicine. The midwives are altogether examined by the surgical associates.

It is the duty of the academies to inform the public authorities on all subjects relating to medical police; to attend to the construction of hospitals, lazarettos, houses of charity, prisons, butcheries, cemeteries, ports, canals, theatres, and churches; to give advice concerning the draining of ponds and lakes; and the manner of procuring the extinction of all contagious diseases; and to recommend any thing beneficial to public health.

For the discharge of these duties, committees, or *juntas de sanidad* are appointed. The principal junta is the supreme one, which has two members of the royal junta of medicine and surgery.

All the other juntas of health are composed of the associates; and, if they are not sufficient, of any other members of the profession. One of their chief duties is the inspection of the good or bad quality of provisions, and reporting to the authorities any thought unwholesome. They also see that the streets are kept clean; that all unhealthy nuisances are removed; investigate the nature of epidemics, report thereon to the academies, inquire the causes of both epidemic and contagious disorders, and suggest the means of checking them. The committees for vaccination attend once or twice every week at the place appointed, and vaccinate gratuitously all who present themselves. These committees also obtain information concerning the cows in Spain on which the vaccine pustules exist, and attend to the procuring of fresh and genuine matter.

Besides these duties, the academies have others of equal if not more importance. For instance, the decision of every case of medical jurisprudence, whether canonical or civil; the suppression of quacks and the sale of secret remedies, or remedies without recipe; appointing persons to take charge of mineral waters; and filling vacancies in the districts; and, finally, the maintaining of medical police. In cases of medical jurisprudence the academies give the information required by the magistrate and judges to remove any doubts. For the examination and decision of these cases, or for any medico-legal instruction, a committee is elected. Whenever quacks and other intruders are reported to the authorites, judges, governors, &c., they are bound to chastise them; and if they should not they are liable themselves to incur punishment upon being reported by the royal junta to the government. Every associate is required to take notice of the sale of any quack specific or secret remedy, or any one which an apothecary or other persons should sell unprescribed by the faculty. The academies, moreover, direct the medical police, which is intended to punish those of the profession not conducting themselves with honor, decorum, and legality; and the physician is obliged by them to own all the instruments necessary for practice, and certain classical books. Practitioners accompanying ministers, ambassadors, and other diplomatists, are put under these restrictions. The subdelegates report regularly the names of all the faculty of their district—those persons about establishing themselves, or who have removed or died being included; and they also take charge of the titles of those who die, and report their dates.

The censors, to examine candidates for the filling of vacancies, are chosen from that class of the profession to which the candidates belong; for instance, the censors chosen to fill the vacancies of a physician must be physicians; or if candidates offer for a place in surgery the censors must be surgeons. The examinations are chiefly practical; after them the candidates are allowed to make remarks, and to propose questions. No one filling any of these stations is permitted to remove from them without giving sufficient reasons to the academies.

The subdelegates discharge any duties required of them by the

academies, and under their immediate control. They may be medical-surgeons, physicians only, or licentiates in medical surgery; and in great populations, as of Madrid, Seville, &c., are appointed with the approbation of the royal junta. Their duties are similar to those of the academies.

Libraries and Cabinets.—They are formed only where there is no school of medicine and surgery. They are composed of foreign and national works, belonging to medicine, surgery, and the collateral sciences, and of all those published by the academies. Each member who publishes a book is required to furnish a copy. The librarian is some member distinguished for professional knowledge and literary attainments; and besides having charge of the library, has that of the cabinets of botany, anatomy, physics, chemistry, &c.

By a provisional law of July 23, 1835, the academies take part in preparing a census of the population, and other statistics of the country.

Revenue.—This is derived, in great part, from the fees charged for conferring degrees and titles, the inquests into epidemics, the publication of works, per centage upon cash imported from the Indies, and gifts from the royal junta. The following is a list of charges for degrees, viz, 20 reals* for that of bachelor in philosophy and in medicine; 100† for a surgeon-bleeder; 250‡ for a licentiate in surgery; 250 for that of physician; 500§ for the degree of *medico-cirujano;* and so on.

To conclude; the academies are empowered to form such resolutions, and take such means as they think fit for the discharge of their functions. For any change in these regulations they must appeal to the royal superior junta; and all regulations made anterior to the above, for the government of academies, of the faculty, the colleges of practical medicine in Madrid, Saragossa, and other parts of Spain, are declared annulled and repealed: moreover, all the funds, rents, grants, and privileges of these extinguished institutions are now the property of the Royal Academies of Medicine and Surgery; so that being organized in the best manner, and well patronized, they are in a prosperous condition, held in the highest estimation both by the professon and by the people, and can compete with those of any other country in usefulness and respectability.

ROYAL COLLEGES OF MEDICINE AND SURGERY.

Among the most important decrees made by Ferdinand the Seventh was that of the twenty-sixth of June, 1827, for the establishment of these colleges; but to some of the Spanish faculty is due the credit of suggesting and recommending this to be done, and of drawing up the regulations for their government.

* One dollar.
† Five dollars.
‡ Twelve dollars and a half.
§ Twenty-five dollars.

These colleges are three in number; there is one at Cadiz, as already mentioned; another at Barcelona; and a third at Madrid. For instruction in the science of medicine alone there is a school attached to each of the universities, of which there are said to be only seven or eight at the present time in operation, though formerly they were twenty-two in number. These colleges are under the control of the royal superior governing junta of medicine and surgery. This junta was created to watch over and see executed the laws or regulations made by the king for the better government of all institutions and persons belonging to the profession of medicine, and was, therefore, invested with extraordinary powers. It was originally composed of the five members of the faculty of the royal chamber, and of one secretary; but it is now formed only of the three *medico-cirujanos* of the royal chamber, and of a secretary, who is likewise a *medico-cirujano.** When the place of any one of these members is vacated the junta reports it to the crown, and proposes three persons in their opinion most worthy of filling the vacancy, and from them is made the selection for that purpose.

The three members of the junta possess the same powers, distinctions, and prerogatives, save that the senior one, being the president, can summon meetings, appoints the time of them, and signs his name the first—the others signing theirs below in the order of their seniority. For his services each member receives a salary of 14,000 reals, or 700 dollars a year.

The junta meets every Monday and Thursday, unless they are festivals, and if they should be, on the two succeeding days. The meetings take place in Madrid, or wherever the sovereign may be residing. The votes are given in an inverse order to the seniority of the members. No one of them is allowed to sign alone any document, and all communications to the crown, to the secretaries of state, to the councils, and other branches of the government, are signed by all the members.

The junta proposes to all the offices of the colleges, save some of those of the professors; transmits to the government the petitions and communications of the faculty; signs the titles of doctors, licentiates, and bachelors in medicine, and in medicine and surgery; also, those of surgeon-bleeders, midwives, and bachelors of arts, in any of the colleges of medicine and surgery. Moreover, the junta can establish academies of medicine and surgery wherever it thinks fit, can make regulations for their government, preside individually at their meetings, appoint subdelegates to detect those who practice medicine without titles, fine offenders, and draw from the treasury the money necessary to defray and exercise authority in many other matters. In fact, this junta is a most powerful body, and constitutes a triumvirate, not very far short in authority to that of the former mistress of the world; but of course only in affairs relative to the medical profession. In making communications to

* A medico-cirujano is a graduate in both medicine and surgery

the sovereign they are obliged to send them through the Minister of Grace and Justice.

That this junta may greatly promote the interests of the profession, maintain good order among its members, and improve the healing art, is probable, provided it makes a proper use of its powers; but should it abuse them it would do much more harm than good both to the profession and the public at large. Its discipline may be too strict, may cramp enterprise, prevent the advancement of such of the faculty as are without influence, keep back the meritorious, and establish a system of exclusive patronage. Its authority, then, as it is liable to these abuses, must be too great, and although submitted to by the members of the medical profession in Spain, would never be tolerated by those of the United States, or of any other country where liberty and equality prevail.

To conclude, concerning this junta:—its secretary signs all the resolutions; he is allowed four clerks and a porter; and if one of the members should die, or be unable to attend to duty from indisposition or any other cause, he takes his place, and retains it until another vocal is appointed, or the absent one has returned.

For the scholastic government of the colleges there are other juntas; one to each of them. These juntas are composed of the *catedraticos*, or professors, the most ancient of whom are the presidents or directors; but in the colleges of Madrid and Barcelona they are partly formed of the clinical professors, or what are termed the *catedraticos de clinica*, and who are the faculty attending the hospitals: the title of professor in Spain being a common one for all belonging to the profession.

The principal object of these juntas is the perfecting of instruction in the colleges. Their powers are similar to those of the royal superior governing junta, but all petitions and communications they make to government must be forwarded through that one, or if it should not transmit them, they can be sent through the Minister of Grace and Justice. It is the duty of these juntas to provide for the good government of their respective colleges; to attend to the observance of the regulations belonging to them; to propose or nominate to the superior junta the officers wanted in the colleges, that they may be appointed by the sovereign; and to censure or suspend any person under them for neglect of duty.

The juntas also take into consideration any business relative to the faculty; as the appointing of committees for examining papers presented by them; nominating pupils for the clinical halls or infirmaries, and admonishing them when necessary; and suspending or expelling from the colleges should just cause be given, either the house students or those who, though in regular attendance on the hospital, do not live in it; but in the last case the juntas are required forthwith to inform the superior junta of the reasons of expulsion. At the end of every year they have printed all memoirs and papers deserving to be known, and present them to the general juntas, which assemble annually.

The director has all the honours of the *medico-cirujanos* of the royal chamber; and he presides at all private and public acts, unless a member of the superior junta be present. In this case, the latter will take the first seat, though he cannot vote. The director can order extraordinary sessions, when he receives notice from the government or royal junta, or in certain unforseen and urgent cases. As head of the college he can enforce the performance of the duties of any individual, correct abuses, call to order, impose silence, and cause the observance of due decorum: and it is his duty to appoint the substitute to any professor absent from sickness or other cause, and to see that the professors attend properly to the patients in the clinical halls, and also diligently instruct the students.

Of the Professors.—On the 2d of October, should it not be a festival, each one of them delivers, in Castilian, an inaugural professional oration, which is afterwards deposited among the archives. Every day, unless it is a festival, during the session or course, each professor gives instruction for an hour and a quarter; taking three quarters for lecture, and a half hour, more or less, for examination. Their vacations occur at the end of the year, during the carnival, &c.

On Thursday, public literary meetings are held, at which the professors attend; also the students of the three first years, and any respectable persons. At these meetings, they discuss various literary subjects, read papers, memoirs, and observations of the faculty of Spain, or of other countries, and pass judgment upon them. Afterwards they discuss administrative and economical subjects. The votes are public or private. They are given in an inverse order to the seniority of the members; and the secret votes are given by white or black balls.

The professors without exception assist at the examinations which are made at the end of the course, and if the students are numerous they divide them into sections of three each.

No professor can absent himself without the permission of the superior junta, save on urgent cases; and then he must have that of the director.

In all the colleges, save that of Madrid, each director has a salary of 18,000 reals* a year, each of the other professors 15,000,† and each of the supernumeraries 10,500.‡ Living being more expensive in Madrid, the director there enjoys a salary of 24,000 reals,§ the other professors receive, each, 18,000, and the three supernumeraries 15,000 reals *per annum.*

All the professors are entitled to the same honours, privileges, and prerogatives, as those granted to the faculty of the Universities, and possess likewise certain personal military rights granted by the crown.

Of the Course of Instruction.—This begins the 2d of October,

* Nine hundred dollars.
† Seven hundred and fifty dollars.
‡ Five hundred and twenty-five dollars.
§ Twelve hundred dollars.

and ends the last of June. There are seven courses for the *medico-cirujanos* and three for the surgeon-bleeders. For these courses there are, including the director, seven ordinary, and three supernumerary professors, or *catedraticos*. The last fill the places of the first when absent from sickness or any other cause. One professor teaches anatomy, legal medicine, public hygiene, medical police, and the application of bandages, from the third of October to the last of June, but instructs in anatomy only for the first five months; in the application of bandages, in March; and in legal medicine, and the remaining branches, in April, May, and June. The students of the first year attend the lectures of the first six months; those of four and five years standing the lectures of the three last months.

A second professor teaches physiology, private hygiene, general pathology, and pathological anatomy. The students of the second year attend his lectures, and once more repeat those of the first course. Lectures are given on the two first branches for the first five months and a half, and on the two last during the last three and a half months. A third professor instructs in chemistry, materia medica, the art of prescription, and in therapeutics. The students of the third year receive his instruction, whilst repeating the studies of the second course. The lectures on the three last branches are delivered during the first seven months, and those on chemistry in the last two months, May and June.

The fourth professor lectures on external affections, including those incident to the army and navy; on diseases of the bones; and on surgical operations. This professor also delivers lectures in the hospital, and performs *post mortem* examinations. The students of the fourth year attend his lectures, and repeat the studies of the third year. They are, moreover, required to practice in the presence of the professor such operations and dissections as he may desire.

The fifth professor is that of obstetrics, the diseases of women and children, and syphilitic complaints. He lectures on these subjects from the third of October to the end of April; and on medical history and bibliography in May and June. He also delivers clinical lectures, and attends cases of difficult labour, in the lying-in wards. In addition to attendance on his lectures his students go to those of the professor of practical surgery.

The sixth professor instructs in the treatment of internal, acute, and chronic diseases, including those incident to the army and navy; teaches the introduction to the practice of medicine, the method of visiting the sick, and the duties of a physician. His class repeat the studies of the preceding year, and also attend the clinical lectures of the following, or the seventh year.

The seventh professor lectures on internal clinical affections for twelve months, beginning on the first of October. To demonstrate the diseases on which he lectures, patients are selected from the hospital. He visits them twice a day; once in the morning,

and again in the afternoon. The students make out the history of such cases as he designates, and perform the dissections required. The students of the seventh year attend the lectures on medical history and bibliography, besides performing the above duties.

The professors of the sixth and seventh year alternate their courses, neither one lecturing on the same branches for two years in succession. Every one of these seven professors is required to make applications of the Hippocratic doctrine, as given in the aphorisms and prognostics of the father of medicine. For this purpose indexes are made, from which each professor can select his parts, and thereby avoid repetition of instruction given by others.

The three supernumerary professors, besides acting as substitutes for the regular ones, have particular duties; one acts as secretary, and teaches therapeutics and materia medica to the surgeon-bleeders; the second is librarian, and instructs them in parturition and syphilitic diseases; and the third is anatomical dissector and demonstrator, prepares the subjects for the lectures, and likewise instructs the surgeon-bleeders in anatomy, physiology, and hygiene. All the professors, with the approbation of the junta of the college, can fix on the elementary works necessary for the proper instruction of their students, and any two of them may exchange duties, but this junta must inform the royal one to obtain its approbation.

When a professorship is vacated, advertisements are made at all the colleges and other places announcing the vacancy, and the salary, honors, and distinctions of the office to be filled; and specifying the conditions and qualifications required of the candidates for the appointment. These notices are given for sixty days before the selection of the professor wanted.

It is indispensable for the candidates to present diplomas of doctors in medicine and surgery, or those of doctors in surgery, or in medicine, obtained at competent schools. Moreover, they must have titles of licentiate in the faculties of which they have not taken the degrees of doctor, and agree, in case of being appointed to the chair vacant, to obtain these degrees before assuming the office.

The period of advertisement having expired, the candidates meet; and a censorship from the junta of the college is appointed, excluding from it any relation of a candidate. The censors having met, the candidates present themselves to undergo the necessary exercises, which are of four sorts; first, the production of a Latin discourse on any subject chosen by an opponent within twenty-four hours; secondly, a lecture on the disease of some patient in the hospital, giving a complete history of the complaint and determining the state of the patient; thirdly, delivering a lecture on anatomy, respecting some point chosen by ballot from two or three subjects, and within twenty-four hours afterwards; and fourthly, undergoing a theoretical and practical examination on all the branches of the profession. The three best qualified candidates are made known to the superior junta, and their names being transmitted to the

queen, she selects the person to receive the appointment and fill the vacant professorship.

Of Exemptions.—A professor after twenty years service can retire from office, and enjoy for life a pension of one half of his salary. If he continues twenty-five years in office he will receive two-thirds, and if thirty years in it the whole of his salary. Should a professor continue his lectures after any one of these periods, he gets an addition of a third part of his retired salary. When one is unable to remain on duty for twenty years, after having faithfully fulfilled his obligations, he can retire, and also enjoy a pension amounting to two-thirds of his salary. The secretary of the junta of the professors, should he be disabled from serving, can retire, and enjoy the honour and salary he before possessed.

The widows and orphans of deceased professors and adjuncts, receive pensions of a third of the salaries of the deceased, from the Monte-pio, established for the benefit of the widows and orphans of such persons, and which derives its funds in part from a discount or tax upon their salaries. In case of the widows marrying, the children receive the pensions until twenty-five years old. When a professor or adjunct leaves neither a wife nor child, but a widowed mother, she will receive the pension, provided she does not already enjoy another one from government. The decree respecting exemptions was made on the twenty-seventh of November, 1826. I have it before me, but will content myself with merely extracting its substance, though on account of its humane provisions it deserves to be published to the world in its entire form.

Adjoining, and connected with each college, are a dissecting-hall, cabinets for anatomical preparations, for chemical and pharmaceutical apparatuses, &c., designed for instruction, and for surgical instruments and machines; and, finally, there is a library containing all modern and ancient, national and foreign works belonging to the science of medicine. The dissecting-hall is furnished with a fountain, tables, stools, towels, sheets, and the instruments necessary for dissection, injections, and preserving preparations. The subjects are obtained from the hospitals, the managers of which are required to furnish as many of them as are wanted for the lectures, and for dissection by the students.

There is a dissector and two assistants, the latter of whom are chosen, by him, the professor of anatomy and three other professors, from among the students of from three to six years' standing.

The dissecting course continues from the first of November to the last of March; and the hours of attendance are from eight to eleven in the morning, and from three to five in the afternoon.

To defray the expenses of the hall, each student pays at the commencement of every course thirty reals vellon, or one dollar and fifty cents.

For the preparation of anatomical parts in wax and other substances, a sculptor, assistant, and apprentice, are employed, and receive fixed salaries.

Of the Students.—They are required to matriculate, and for that purpose must send memorials to the director through the secretary, accompanied by their baptismal faith, a statement of the correctness of their habits and morals, and certificates of having been instructed in government, grammar, logic, mathematics, experimental physics, and botany, sufficiently to enable them to receive the titles of Bachelors in Philosophy. To prove their being qualified for this title, they have to undergo an examination by three judges chosen from the professors. Having undergone an examination satisfactory to the judges, each student takes the oath exacted on such occasions by the secretary, and then is adorned with the bonnet by the president. The ceremony performed, he gets a diploma, which is signed by the royal junta. With this degree, he can matriculate for the study of medicine in all the schools and universities. Should a student have received the degree of bachelor in philosophy, in any university or school authorized by it, he can matriculate without the examination. Having matriculated, the students are exempted from levies and enlistments, being considered as members of a faculty necessary to the state, especially in time of war.

Any student can be expelled by the junta of the college for improper conduct, but not without the approval of the superior junta. Every Monday a student of a different course delivers a Latin discourse, to be followed by a discussion. At the conclusion of each scholastic year the students undergo an examination by the professors to whose classes they belong, and receive the following marks; Reproved, Medium, Good, Excellent. Whoever gets the mark reproved, loses the course; and if he have this mark the next year is expelled. Every year some of the students going through the last course are appointed to deliver Latin dissertations on one of three subjects chosen by the junta of the college. The dissertations delivered, the authors undergo an examination in Latin or Castilian by censors, who determine their merits, and then fix upon the three candidates judged most worthy. From these three, their names having been made known, the queen appoints one to receive the premium of 15000 reals, or 75 dollars. A portion of the students are called *internal*, from their residing in the hospital or infirmaries of the college; they are required to be bachelors, and to have attended two courses, but not more, to avoid too frequent changes. In equality of circumstances, that is in regard to good conduct and qualifications, the sons of deceased professors in the colleges, or of the faculty of the army, navy, and hospitals, have the preference. The number of internal students is proportioned to that of patients. For the lying-in department, two students are chosen by the professor having it in charge. All the internal students are furnished with food at the expense of the institution, and are allowed a uniform. For their washing expenses they receive 40 reals a month. To watch over them and see them attend to their duties, two assistant professors live either in the college or hospital. These

assistants act as substitutes to their principals when absent, are fed at the expense of the hospital, and receive, each, 200 dollars a year. If the food of the students and assistants should not be found by the hospital they are allowed for it five reals a day.

For the practical instruction of the students all the colleges have several clinical wards attached to them, which are kept open, not only during the session but the vacations. One ward is for internal, two for external diseases; a fourth for obstetrical cases; a fifth for children under seven years of age; a sixth for females affected with complaints peculiar to the sex. The attending physicians have the right to select from the hospital patients for these wards; nor are the managers permitted under any pretext to interfere.

In the obstetrical ward are six beds, designed alone for women in the ninth month of pregnancy. That all knowledge of their persons may be prevented they do not give in their names, but are known entirely by the numbers of their beds, save to the confessor of the hospital, to whom they deliver sealed letters containing their names and address, and to be opened only in case of death occurring. When the patients are well and leave the hospital these letters are returned to them sealed. In this hall the students assist by turns, two being on duty at a time, and continue their service for a week to make way for two more.

The two assistant professors have charge of all the patients, see that all the orders of the professors are executed by the house students, receive the patients as they come in, and direct them to the proper wards. The assistants alternate their duties, one keeping guard daily; and one must always be in the hospital. The students are under their control, and are bound to treat them with the respect and decorum due to superiors. The assistants attend to the giving of medicines to the sick; the students to applying external remedies.

Of the Examinations.—All those who have gone through the course of four years in the universities, and two years in the colleges; or have been one year in a college and one in a hospital; or those who have concluded seven years in a medico-chirurgical college, can offer themselves for examination, and for receiving the degree of licentiate, physician, or *medico-cirujano.*

The person wishing to be examined must produce certificates of his matriculation and courses of study, and pay the fee, which for a physician is 2500 reals,* and for a *medico-cirujano* 3000 reals.† His fee will not be returned if he is rejected. The examinations of the candidates for a medico-chirurgical degree are of course more general than those for that of a physician. The former undergo first an examination conducted in Latin, concerning the institutes of the science of healing; then he is questioned respecting the disease of some patient present, gives a history of the disease, points out its actual state, and after retiring a half hour, re-enters, gives its causes, diagnosis, prognosis and treatment. Having ended with

* One hundred and twenty-five dollars. † One hundred and fifty dollars.

this subject, he next does the same with respect to a patient suffering from an external disease; then performs as many operations upon a dead body as the examiners wish, and terminates his examination by answering questions on midwifery.

His examination concluded, the professors give in their votes, with white or black balls, and pass or reject the candidate according to the plurality of one or the other. As usual elsewhere the black balls reject. The examiners appoint for the unsuccessful a time for a second trial, which however cannot take place under six months after the first rejection; under a year after the second; and under two years after the third rejection. If the candidate is rejected for a third time, he cannot again offer. The rejected, on re-examination, pay a fee of seventy reals; ten of which go to the secretary, and sixty to the three examiners.

After the examination, the passed candidate, or laureate, kneels before the president of the junta, and takes the customary oaths in front of the cross which is fixed on the table between two lighted candles. The president then decorates him with the insignia belonging to the degree of licentiate, and reads to him the privileges and exemptions acquired. The insignia of a licentiate in medicine are a black bonnet, and a dress of yellow silk, having its borders, buttons, and button-holes, worked with gold thread. For a medico-chirurgical licentiate, the insignia are a brown bonnet, and a dress of brown satin lined with yellow silk, and having the same kind of borders, buttons, and button-holes, as the other.

The highest degree conferred is one lately established, that of doctor of medicine and surgery. The diplomas of those obtaining this degree are signed exclusively by the royal superior governing junta of medicine and surgery; but the professors of the colleges examine the candidates and confer the degrees, to obtain which it is necessary to present a memorial, through the secretary, to the college director, and at the same time to present the diploma of licentiate. The candidate next selects a patron from the professors to deliver a short discourse in his praise, and composes a Latin oration on one of the aphorisms of Hippocrates. The day and hour for the ceremony of conferring the degree having come, a procession is formed at the hall of the junta; the laureate being adorned with his insignia of licentiate; the patron and the other professors dressed in long black gowns; and the confessors of other colleges, and other members of the faculty, placed according to seniority. The licentiate having stationed himself on the left, the patron on the right of the president, the procession moves on to the amphitheatre, where having arrived the patron takes the chair, and the licentiate a seat of distinction near him. After a short respite the president, rings a small bell, the licentiate salutes him and others in Latin and delivers his oration. This ended, the bell is rung again, the patron delivers his eulogy in Latin on the licentiate, then asks permission of the president to adorn his client with the insignia of doctor, and obtaining it, administers the customary oath on the Book of the

Evangelists, and on the Cross. The oaths taken, the patron commands the client to ascend to the chair, and adorns him there with the insignia of the degree, explaining the signification of every one. They then mutually embrace, and descend from the chair at the sound of the bell. The laureate next, beginning with the president, embraces every doctor from right to left, and takes his seat. The president, ringing the bell, the procession retires to the place from which it departed.

The degree of bachelor, in medicine or surgery, or in both at the same time, is conferred on either natives or foreigners upon their conforming to the rules established; such as paying the fees, and showing their titles, which if received abroad must have the signature of the representative of Spain in the country where they were given. The candidates also have to undergo an examination.

The oaths for the degrees of bachelors in philosophy and medicine, or in medicine and surgery together, are the same, only that the names are varied, and the insignia of the degrees differ. These oaths are so singular, as are likewise those taken at the conferring of other degrees, and are attended by so much formality, that it will be well for me to repeat and describe the manner of administering them, for the amusement if not instruction of the reader.

Oaths taken by a Bachelor.—The examination concluded, the passed candidate, or laureate, enters the hall where the judges are seated, walks up to the president, and addresses him in Latin to this effect. "I beseech you, most worthy president, that you will think proper to confer on me the degree of bachelor, in the science of healing." The president answers, in Latin: "To your desires I most willingly accede, provided you will first take the oaths prescribed." They both then make the sign of the cross, and perform the following dialogue in the same language. "Do you swear that you will assert and proclaim, that the blessed Virgin Mary was preserved in the first instant of her conception from original sin by the merits of her most pure son Jesus Christ?" "I swear," answers the laureate. "Do you swear, that you will defend the supreme power of the king and of his crown?" "I swear." "Do you swear, moreover, that you will not continue in, nor will belong to any lodge or secret society, reprobated by the laws?" "I swear." Do you swear, likewise, to help, defend, and instruct no one of the impostors, who permit regicide, and tyrannicide, like that defined in the Constantian Council, Session the Fifteenth?" "I swear." "Do you swear, not to recognize in the least the absurd principle, which maintains that the people are the *proper arbiters* to change constituted governments?" "I swear." Then the president proceeds: "By the authority granted me by the laws, I institute you a bachelor in the science of healing;" and he next puts upon the graduate the proper investiture and terminates the ceremony.

Oaths of a Licentiate.—The candidate having been examined, and having asked for the degree of bachelor and received the president's answer, puts his right hand on the Book of the Evangelists,

and takes the oaths in Latin, after this manner. The president asks him, "Do you confirm whatever oaths you have taken in taking the bachelorship in the science of medicine and surgery, or in medicine?" "I confirm." "Do you swear, moreover, by the most holy gospel, that you will assist with all care and diligence the sick who shall invoke your aid, whether they be rich or poor; and that you will furnish the solaces of your most worthy profession to the indigent entirely without reward?" "I swear." "Do you swear, that as you have the care of the public health, and that of the citizens, that you will contemn all dangers and contagions?" "I swear." "Do you swear, that you will earnestly take care that those lying sick with a grievous disease shall make disposition of both their spiritual and their temporal affairs?" "I swear." "Do you swear, moreover, that you will neither assist in an abortion, nor in an infanticide; and that upon infants in the moment of death, either before,* or after they are born, you will sprinkle the water of baptism?" "I swear." "Do you swear, at length, in whatever things it is necessary always to preserve secrecy?" "I swear," again says the graduate; and the president continues, "If you keep your oaths may God help you, but if you do otherwise may he inflict the severest penalties." The ceremony after this is the same as that observed in conferring the degree of bachelor.

Mode of conferring the Degree of Doctor.—The laureate and patron having concluded their orations, the former says in Latin to the president, "I most humbly pray and beseech you, most wise president, that you may think fit to confer on me the degree of doctor." The president answers, "you are most deserving, and after having administered the oaths, we will confer." Then the laureate kneels, lays his right hand on the cross, and says, "the oaths which I took in the reception of the licentiateship of the medico-chirurgical faculty I hold and desire to hold ratified, and I so confirm." The president, the oath being finished, makes the following address in Latin, "Since you are plainly qualified in the medico-chirurgical science, and have given the required oaths, by the authority granted us by the laws, we create you, formerly instituted a licentiate, now also a doctor of the medico-chirurgical science, as you are most deserving, and we confer on you all the rights and privileges which other doctors enjoy by law and custom, inasmuch as there is no difference between their and your learning, so that you will everywhere proclaim yourself a doctor, and will enjoy the same dignities and privileges as the doctors of all the universities of Spain; and, consequently, we grant to your patron the liberty of proclaiming, showing, and decorating you as a doctor in the medico-chirurgical science." This said, the laureate rises, and the patron says, "Ascend most excellent client to this chair to which wisdom calls you." The client having gone up, the patron continues, "and since to-day a spouse is given to you, accept the golden ring which is the first seal of this espousal. The ring having been put upon the ring-finger of the left hand, the patron proceeds, "And I, your patron,

* The manner of performing baptism before birth is rather mysterious.

professor and doctor in the medico-chirurgical science, and delegated by the most illustrious president to proclaim you in this place, do publicly declare you, already distinguished by the degree of licentiate in medico-chirurgical science, likewise a doctor of the same faculty, most worthy of all the indulgencies, privileges, and honours, which by law and custom all other doctors enjoy. In the name of the Father, the Son, and the Holy Ghost—Amen." He then delivers to the client a pair of white gloves, and says, "Doctor of the medico-chirurgical profession accept the white gloves by which you may be able to handle the books of the healing science;" at the same time he gives him the book of Hippocrates, and says, "Accept the book of Hippocrates, by which you may become more learned and may know how to teach others." The laureate then seats himself at the left hand of the patron, who taking in his right hand a naked sword observes, "Accept this sword which we show you as a sign of fortitude, and which I deliver to you as an argument to convict errors and firmly to defend truth." Next, the patron puts on his head a cap with a tassel of the degree, and says to the client, "Accept this silk cap, the highest ornament of the healing science, which is obtained by your merits." Afterwards he delivers to him a stick, saying, "Accept the staff, a sign of authority and care over the comfort and support of the sick."

The laureate being adorned with all the insignia of the degree, the patron says, at the same time sitting at his left side, "Perfected by these marks of honour, wisdom, and authority, sit now in the chair and likewise on the throne of your science, upon which I place you to the honor of our gymnasium."

The patron and the doctor having been seated a while, the former rises up and says, "Arise, therefore, my client, that you may first receive the embraces of your patron." They then embrace on one side, and the latter continues, "Behold the odour of my son, it is like the odour of a plenteous field, which God has blest."* After this has been said they embrace on the other side, and the patron continues, "May God be your helper, and may the Omnipotent, moreover, bless you with the benedictions of heaven—Amen." This concludes the act: both descend from the chair, and the graduate embraces all the directors present.

Of Surgeon-Bleeders and Midwives.—Persons wishing to become surgeon-bleeders are required to matriculate in the colleges, and for that purpose they must be able to read, write, work the four rules of arithmetic, to add, substract, multiply, and divide, must understand the Castilian grammar, make known their faith of baptism and *purity of blood*, and give information respecting the correctness of their habits. Having matriculated they go through a course of three years' study. During the first year they study physiology and hygiene; during the second they repeat the studies of the first year, and study materia medica, therapeutics, midwifery, and syphilitic disorders; and during the third year repeat the studies of the second, learn the application of

* "Ecce odor filii mei sicut agri pleni, cui, benedixit dominus."

bandages, the performance of operations, and study external affections, including those of the bones, and legal surgery with the art of making medico-legal declarations. Having passed through three courses of study they undergo an examination, but are not permitted to do so until they present certificates, that either before or after their studies they have practised for three years with a surgeon-bleeder or surgeon, in a hospital, or elsewhere. Before examination they must make a deposit of 2000 reals, and afterwards pay the fees to the examiners and secretary. Having passed the examination they take the oaths required of them, which are much the same as those taken by the bachelors, save that they are spoken in Spanish instead of Latin, and the candidates swear by a cross formed with the thumb and forefingers of the secretary and of themselves, that they will *defend* the *mystery of the most pure conception of the Virgin Mary.* The oaths having been taken the secretary confers the titles. The surgeon-bleeders treat diseases purely external, practice such operations as they require, and bleed, but are not allowed to prescribe any internal remedy, for when one is required it is their duty to call in a physician or surgeon, save in the most urgent cases, and in these only temporarily, and until the services of one or the other can be procured.

As regards midwives, it is made indispensable for them to go through a course of instruction, either of four years in practice with some one of the faculty or with an approved midwife, or to have practised two years and studied two in some one of the medico-chirurgical colleges. The midwives are taught by the supernumerary professor of obstetrics during the month of June. The lectures delivered are upon easy and difficult labour; the functions of the sex, those of the fœtus, and also the complaints to which they are liable. They are instructed likewise in the manner of administering the water called the water of *succour* to infants when they are very ill. The midwives are required to undergo a theoretical and practical examination after producing certificates of good habits, and of their being widows or wives. Having been found qualified they receive the titles to practice, after paying a fee of 800 reals.

Of the diplomas and titles conferred on the graduates, it will be sufficient to state, that the former are in Latin and made out in the manner common to most nations, and given to bachelors in philosophy and medicine, and of medicine and surgery, and to doctors in the latter sciences; and that titles are given to licentiates in medicine, to those in medicine and surgery, to surgeon-bleeders, and to midwives. In these titles are mentioned the oaths taken, and the various authorities are exhorted to take care that the licentiates have all the honours, privileges, &c., which they are accustomed to enjoy.

Of the Funds of the Colleges and Faculty generally.—These arise from different grants made by the crown, from the fees paid for titles and degrees, matriculation, and certificates; from the money received from the sale of memoirs and other works;

and the sums obtained by taxes, certificates, reports, declarations, and other sources. In each college is a finance committee of three, who have charge of the funds, and pay from them the expenses of the institution. Each professor sends in monthly an account of expenses incurred in his course of instruction, which, on its being approved by the junta, is repaid. Every three months the colleges forward to the royal superior governing junta an account of the funds they have in possession, and what money is wanted to pay salaries and other expenses. The money wanted by one college may be taken from the surplus revenue of another. The funds of the colleges being in common with those of the whole faculty, may be disposed of as the royal superior junta thinks convenient. This is certainly a wise regulation in one respect; since by it all medical institutions are connected, supply each other's necessities, are mutually dependant, and lend reciprocal assistance.

Penalties for Practising without the proper Licences.—No one is permitted to practise the healing art without having first presented to the magistrate of his district the credentials required, which are those already mentioned, and which cannot be given by any other corporation, college, or tribunal, than those specified. All persons who practice without the competent title of physician, surgeon, *medico-cirujano*, surgeon-bleeder, or midwife, incur the following fines and penalties: for the first offence, fifty dollars; for the second, one hundred dollars, with exile from the place of residence, which, if Madrid, or other royal sojourn, must be to the distance of ten leagues; and for the third offence, two hundred dollars, and transportation to the prisons of America or of Africa. These fines and penalties the magistrates can enforce whether they obtain a knowledge of the offences officially or unofficially. An omission to do so subjects the magistrates themselves to a similar infliction. The midwives are only subject to pecuniary penalties.

All quacks incur the above penalties for selling specifics and nostrums. If any one possesses, in his opinion, a secret remedy for any disease, he must report it to the superior junta, that its efficacy may be tested; and if it is found useful it may be made known, and the owner receive the reward thought to be deserved. Of the fines, a fourth is paid to the informer. The remainder is divided into three parts; of which one goes to the royal chamber, one to the judge who exacts the fine, and one to the common fund of the faculty. The persons, however, who particularly attend to the observance of these laws are the subdelegates appointed by the royal junta. They make known all offenders, and bring them to justice, and if they neglect to do so suffer themselves. Every three years they send in reports of all persons practising the profession, and the names of those who have died, removed, and been lately established. They have to put down the dates of the titles, with the names of the owners written by themselves opposite them.

There are some other regulations for the government of the faculty generally. For instance, the *medico-cirujanos* of the

royal chamber, and of the hospitals, must be graduates of the colleges mentioned, or of others having the same courses of study; and they are required to perform the duties of both physicians and surgeons, for which they are paid accordingly. No one of them however can receive the pay of both physician and surgeon, but he may get the three-fourths of the two salaries.

In equality of circumstances, those holding the degree of doctor are preferred to those having that of licentiate. Practitioners of medicine, and those of surgery who have studied according to the ancient method of instruction, can locate themselves and practice to suit their convenience, and as they have been accustomed.

There are other regulations which might be usefully mentioned; but having already drawn out this account to such an unexpected length, I must stop here to avoid the charge of tediousness. I shall therefore forego criticisms which might be perhaps properly made; leaving to the reader to discover merits or to detect faults, to praise or to censure, as he may find occasion. Should he be fond of *medical politics* he will find ample subjects for discussion and meditation.

MEDICAL CORPS OF THE SPANISH NAVY.

It was my intention to give an account of this corps, but on inquiry and investigation I ascertained that it had fallen into a state of as much neglect as the navy itself, and that very little information worthy of notice could be elicited respecting its present or past condition. The government in 1832 had a book of regulations made for the improvement of the corps, which was presented to the king for his approval, but owing to some change in the ministry it was not approved, and therefore the regulations have not taken effect. It appears, however, that all the medical officers of the navy are educated at the public expense, and after a certain term of active service are allowed to retire and engage in private business. Among them are a number who have filled professorships at Cadiz, and other places; and of the former was doctor Pedro Maria Gonzalez, a man of distinguished learning and abilities. He published in 1805 a work, in my possession, upon the Diseases of Seamen; in which he makes known their causes, and the method of treatment, and gives a vast deal of useful information respecting the provisions best suited for mariners, and the proper manner of preserving them, and also concerning nautical hygiene. This work is written in chaste Castilian, is well worthy of perusal, and is still one of the most popular books in the kingdom.

THE MEDICAL STAFF OF THE ARMY.

Improvements in the profession of medicine have not been confined alone to the civil faculty of Spain; but they have been

likewise extended to the military. The regulations for the government of the latter underwent, accordingly, important modifications in 1829. Anterior to that time the faculty of the Spanish army consisted of both surgeons and physicians, who practised separately; each one attending exclusively to his own branch; but at present all the faculty of the army are required to be *medico-cirujanos*, save when these are not to be had.

Formerly the chiefs of the medical staff were the *proto-medico-general* and the *cirujano major*, the first physician general and the surgeon major; but now there are no such officers, and all the authority they possessed has been given to the omnipotent body so often mentioned, the royal superior governing junta of medicine and surgery. Accordingly, this junta has the general government of the military faculty; is the organ of communication with the minister of war, and through him with the crown; transfers the medical officers from one corps of the army to another, and recommends all such persons as merit premiums, promotion, exemptions, retirement, pensions, and commissions. In time of war, upon the recommendation of the junta, an inspector is appointed by the government to go through the whole army, to examine the condition of the hospitals, and all things relative to the health of the different regiments; to report thereon to the junta, and suggest any improvement wanted.

As soon as war is declared, the junta organizes the medical corps intended for service in the field; advertises for professional men needed for filling up vacancies; makes known what will be their duties, rank, salaries, and situations during the war, and what they will be after it is concluded.

Applicants who are *medico-cirujanos* are preferred before those who are simply physicians or surgeons, and the latter are taken in preference to surgeon-bleeders who are appointed only in cases of necessity, and are chosen according to their experience. In case of necessity a draft or conscription can be made on all the faculty of the kingdom; the whole of them being obliged to serve; but bachelors are taken in preference to all others, widowers without children next, and then husbands who are childless, the last selected being fathers.

As soon as a choice is made of those wanted, their names are forwarded to the minister of war. The appointments are made by him with the approval of the sovereign, and are communicated to the junta. However, in urgent cases the chiefs of the medical corps can make temporary appointments, but must notify the junta thereof.

In addition to the duties mentioned as belonging to this body, it has to keep books called *hojas de servicio*, or leaves of service; in which are written the merits and demerits of the medical staff, and other matters relating to it. The junta likewise is required at the end of every year to report to the government the promotions, deaths, conduct, &c., of every medical officer. It has to attend, also, to the requisitions for medicines, instruments, and whatever else may

be wanted; and, in fine, to see that reports are made upon the condition of every thing belonging to the medical department.

Next in rank to the junta are the vice-directors, who are also required to be *medico-cirujanos*, and to hold the degree of Doctor. The number is in proportion to that of the districts; there being one of the former to each of the latter. Accordingly there are six directors, there being six districts. The first of these is Arragon, Navarre, and the Biscayan Provinces; the second, Old and New Castile; the third, Galicia and the Asturias; the fourth, Estremadura, and the kingdoms of Cordova and Seville; the fifth, Valencia, Murcia, Granada, and Jaen; and the sixth, Catalonia. There is likewise a vice-director for the Balearic islands, another for the Canaries, a third for Cuba, and others for the rest of the Spanish Territories, in both the eastern and western parts of the world. The duties of these directors are manifold. They point out the places thought beneficial or prejudicial to the health of the armies; ascertain the causes of their salubrity or insalubrity; inspect the instruments and medicines; receive monthly reports of all patients taken under treatment, and of those who have died, been cured, or remain sick in the regiments or hospitals; they order consultations to be held, control the meetings of the faculty for the discussion of professional subjects; suspend inferior officers for neglect of duty, report them to the junta; and take special charge of the hospitals, by seeing that they are provided with every thing necessary for the patients, correcting and remedying abuses, and obliging the medical officers who have charge of the hospitals to perform their duties punctually. When an epidemic or contagious disease occurs, the vice-director of the district wherein it exists forthwith obtains all the information desirable concerning the disease, making known its progress, cause, character, and method of cure, all of which he communicates to the junta.

The Medico-Cirujanos.—These are of three grades. Before entering service they undergo a strict examination by three censors; present certificates of merit, of their having taken degrees of licentiates in medicine and surgery, and of not being over forty years old. Besides performing the ordinary duties, they attend gratis the families of the corps to which they belong, send reports to the vice-directors concerning the sick, their diseases and treatment, and state those who have been sent to the hospitals, or allowed to resort to mineral springs. If any epidemic or contagious disease appear among the soldiers they forthwith report it to the commander, and suggest the means thought fit for checking it. Many other duties are expressly assigned these officers, but it would be superfluous to specify them, and I will only remark that they have to attend strictly to all subjects in which the health of the army is concerned, as, for example, to the food, water, cleanliness, &c.

The chiefs of the medical staff in the field are the *medico-cirujanos majores;* who are appointed from among persons who have served as vice-directors, or others thought fit by the junta. For an army of twenty thousand men there are, one *medico-cirujano*

major; one adjutant or second, called *vice-medico-cirujano major,* and as many first, second, and third medico-surgeons as may be wanted in the opinion of the *medico-cirujano major.* These subalterns are distributed among the divisions and brigades. The first nominated for a division is the chief of all the rest of the faculty belonging to it, and has his orders obeyed accordingly. For the hospitals, fixed or moveable, there are some of the second professors appointed with several assistants, called *practicantes* and *provisionales,* who may be chosen from among civilians or retired members of the military faculty.

Of the Medico-cirujano Major.—As soon as he assumes his office he makes out a statement of the medicines, instruments, utensils, and all other articles wanted in his department. He makes a distribution of the faculty among the divisions, brigades, and hospitals; he remits monthly to the royal junta a duplicate account of all the members of his staff, and the persons employed by them; states their residence and occupations; gives an account of the hospitals and of the patients who have entered, been discharged, and died, and of the diseases which may have existed, or still exist. He establishes hospitals, makes regulations for them, appoints the professional attendants, chooses the secretary and scribes whom he may need for correspondence, employs the necessary number of practicantes, commonly one for every battalion, and fills up the vacancies which may occur.

The *medico-cirujano major* resides near the general-in-chief, follows him in all his movements, sends a surgeon daily to receive general orders, and despatches his second, for accompanying a general of division ordered on a separate expedition. He fixes upon the sites for hospitals in conjunction with the engineer, and chooses the quarters for his patients. In case of being sick his second performs his duties. The campaign concluded, he gives passports to his subalterns, furnishes them with funds, reports upon their conduct, application to duty, and intelligence, to the Minister of War through the royal junta, that they may be rewarded in proportion to their merits.

His second, or the *vice-medico-cirujano major,* besides performing the duties mentioned, attends the sick officers near him; inspects the hospitals, sees that they are kept in a good condition; that the sick and wounded are properly attended; the dispensary, kitchen, wardrobe, are in good order; and he reports all delinquents, whether officers or privates belonging or not to the medical corps. In fine, he obeys all orders from his superior the *medico-cirujano major.*

Duties of the Military Faculty generally.—Every individual, from the highest to the lowest professional rank, both in peace and war, is obliged to possess instruments for amputation and trepanning, and a pocket case. Before taking the place assigned to him, he must present himself for inspection to the colonel, or other commander of the corps to which he is ordered. Unless he thus reports

himself he cannot take his post. The directors, inspectors, and commanders of the forces cannot, of themselves, separate and transfer any of the professors, but must consult the crown, through the junta, for its approval. Should any one of the faculty in time of war lose his instruments, and make a satisfactory statement thereof, he has them paid for, or replaced at the royal expense.

The whole corps are bound to recognize the royal junta as its chief, and obey all orders from it whether given in writing or verbally. No one can obtain leave of absence over two months, without permission from government. For any time under that, leave can be given by the military commanders, but a substitute must be first obtained from among his companions. At the period of any alarm,—sedition, tumult, conflagration, or battle, every one must repair to his station, and hold himself in readiness for rendering professional assistance. Should any one neglect his duty or desert his station he suffers a penalty appropriate to the offence.

In the month of January of every year reports are sent to the royal junta of their respective ranks, merits, and services, as shown in the "leaves of service," after this manner:—

"*Merits and Services of Doctor or Licentiate.*—Vice-director, first, second, or third professor of such a district, regiment, battalion, hospital, corps, fortress, &c.; married or single, age ——; studied in the college of ——; during the years ——; obtained the degrees in the year ——; before beginning his professional career, went through the following studies, ——; was found qualified in them, and graduated in the year ——, in the college of medicine and surgery of ——; has served in the hospital or battalion, or regiment, &c., as professor, during the years, months, ——." Afterwards are expressed his merits, and whether his services were rendered by royal license. At the conclusion are affixed the date and the signature of the person.

Whoever wishes to publish a dissertation on a disease, or wants to retire on a pension, must apply through a vice-director to the junta. By an order of April 6th, 1826, all in active service, let their rank be what it may, are obliged to obey without excuse, or exception, an order for them to go to any part of the royal possessions at home or abroad: for disobedience they incur the penalty of dismissal, and the loss of their military honours and privileges. All are required to attend consultations about officers, their wives or children, either with the faculty of the army, or with civilians. Both in time of peace and of war the medical corps are bound to observe all the regulations of the army, and obey all orders of the colonels, commanders, and generals-in-chief, which are not contrary to these professional regulations, do not trench on the due exercise of their profession, nor cause them to violate the oaths taken in receiving the degrees of licentiates. The vice-director being absent, the senior medical officer presides over, directs, and commands the rest of the corps in all professional matters.

In voyages to various parts of the world, on public occasions, at interments, &c., they enjoy the stations, quarters, rations, compensations, and conveyances of other officers of their rank. No member of the corps can hold two stations at the same time. The hours for attendance on the sick are those fixed on by the faculty. For the execution of mechanical offices they can have as many assistants as may be necessary.

For permission to marry, an *application* must be made, through the vice-director of the respective district, the royal junta, and minister of war, to her majesty. In like manner, applications for changing stations or classes must be made.

Before they give certificates relative to the health of the troops, a written order from their commanders is required. In case of a surgeon* being called on to examine the soundness or unsoundness, fitness or unfitness of recruits, he must note whether they come voluntarily or involuntarily, and whether they conceal or feign disorders and defects.

The military faculty certify, and give their opinions respecting wounds feigned to have been, or which actually were received in the manner specified in the formula adopted in the army; of which formula each one must have a copy. They make coroner's inquests, and take part in all medico-legal cases, save those pending between soldiers and citizens, in which last they are not allowed to give certificates without a written order from the military commanders. The invalids are divided by the faculty into the three classes,—of *absolutely unfit*, or unable to perform duty; *half invalids;* and persons *temporarily* unable to serve from some affection, the cure of which is *probable.* The certificates are made out according to these classes.

A recruit found out to be an invalid and an impostor is reported to the commander. No certificate can be given to officers without a previous order from their chiefs; nor any be required concerning wounds, beyond twenty-four hours after the death of the individuals. When troops embark, the army and navy surgeons attend patients in conjunction. The medical officers of a regiment go twice a week to the hospitals to examine the patients belonging to it, and if necessary to hold consultations upon their complaints.

Superiors can punish inferiors by confinement, under double guards, for light offences, but must report serious ones to the vice-directors. Every two months the surgeons examine the boys, servants, and musicians, to see if they are infected with cutaneous diseases, and, if they are, to prevent propagation.

At general exercise, the medicines, bandages, ligatures, instruments, &c., used in action are carried along with medical officers to their stations. Should any of them be taken prisoners, they nevertheless are promoted as others, unless they forfeit their claims by bad

* Surgeon, as the more familiar title to our readers, is introduced in this section in place of that of *medico-cirujano.*

conduct, either professionally or politically. When they remove, or change their station, they are required to report to the vice-director of the new district; and at Madrid, they must make known their address, the street, house, and quarter, where living; and likewise on leaving the city give intelligence accordingly.

The faculty of the provincial troops, or the militia, are appointed in the same manner as the above; abide by the same regulations, receive the same salaries, and enjoy the like privileges when under arms. In case of a vacancy occurring their inspector generally reports it to government. In the performance of their duties they obey the orders of the royal junta, and those of both their military and professional chiefs.

Of the Salaries, Allowances, Rank, &c.—The pay of the military faculty varies according as it is peace or war, and to their rank and location. In time of peace, the vice-directors get fifteen thousand reals a-year;* in war, twenty thousand reals.† During peace the surgeons receive pay agreeably to the corps to which they are attached, and stations held, from six to twelve thousand reals. During war all those of the first grade get ten thousand, the second eight thousand, and the *practicantes* four thousand reals. The *medico-cirujanos majores* receive a salary of twenty-four thousand reals‡ a-year.

Besides these salaries they are all allowed rations, lodgings, horses, &c., according to their rank, which is as follows:—

The vice-directors and *medico-cirujanos majores*, rank with colonels, the surgeons of the royal guard with lieutenant colonels; the first surgeons of the army with captains, the second with lieutenants, the third and assistants of hospital surgeons, let them be first or second, with sub-lieutenants. The faculty, as other individuals of the army, are subject to military jurisdiction, save in matters relating to the profession. In these, professional authority is paramount.

Promotion takes place by seniority, from the lowest to the highest grade, inclusive, that is from an assistant surgeon of a hospital, to a vice-director of a district, save in case of bad conduct, and in appointments for the royal chamber, for which surgeons may be chosen from the directors of colleges, and other eminent persons, as the royal junta thinks proper. The order of promotions is the following:—

From assistant surgeons of hospitals they rise to third surgeons of the third battalions of the corps of the army; from these to the second of the same; from these to the first of the same; from the first of the army to the third of the royal guard; from the third to the second; from the second to the first of the same; whether of the cavalry or the infantry. Into the corps of halberdiers a third from the royal guard can enter, and then rise in the manner mentioned. A second of a military college can pass to a third of the army.

* Seven hundred and fifty dollars. † One thousand dollars.
‡ Twelve hundred dollars.

In the promotions the surgeons of squadrons of artillery, battalions of sappers and Swiss regiments, if there be any, are comprehended. Those who retire from service are put into two classes—that of Dispersed, and of Fixed Residences; as in places having castles; corps of veterans, general receptacles of invalids, and military hospitals. They who have served twenty years can retire and receive a third of the pay of active service: they who have served twenty-five years, get two thirds; and such as have been thirty years in service the whole of their pay, with the obligation of serving if wanted in a hospital, castle, or other place, indicated by the junta. A professor who loses his health in service can retire on half-pay, or upon a greater annuity if recommended by the junta, provided he has served with exactness and integrity. All the retired enjoy their wonted privileges and rank, and wear the same uniform. Any one, though well, can leave the service at the expiration of fifteen years, wear the uniform of his rank, and retain his military rights. All who agree to the necessary discounts, receive pensions from the *monte-pio* of surgeons in the army, established in 1803; and when they die, their widows and children receive from it the same pensions which they had enjoyed.

Hospitals.—They are of two kinds; the fixed, and the moveable, or what are termed the *ambulantes*. The former are attended alternately and monthly by the faculty of the garrisons, or by that of the regiments and battalions. The surgeons of the hospitals have under them assistants, *practicantes*, and nurses, in proportion to the duties to be performed. One *practicante* and two nurses are allowed for every forty patients. A *practicante* who serves for three years can undergo an examination as a surgeon-bleeder, and as one who has studied in a college for that purpose for three years, provided he can procure certificates from the professors of his having attended practical lectures, visited the infirmaries, and practised dissections. These subalterns keep a constant watch both day and night, enjoy military honors only while in service, and receive pay at the discretion of the minister of finance, and according to what is laid down in the contracts.

The first surgeon of a regiment or garrison is *ex officio* a member of the administration of the military hospital, or of that of a civil one in which soldiers are treated.

In Madrid, a member of the junta, or vice-directors of the two Castiles, is a member and counsellor of the military hospitals. The surgeons of these hospitals can provide at the expense of government whatever is required for the use of their patients, and can condemn anything considered unfit to be employed. The first surgeons have the control of all persons in the hospitals, but are not permitted to treat as subalterns the medical officers of the line, who are only subject to the orders of their natural chiefs.

It is the duty of the assistant surgeons to attend to the giving of food and medicines, to pay extra visits, to examine the patients entering the hospitals, to keep the instruments in order, to assist

in consultations, to appoint the necessary guards or watches, and to do all the duties of the surgeons when they are absent. Patients recently discharged are sent, before returning to duty, to the wards of convalescence, where they remain until they recover their wonted strength.

The moveable hospitals are fixed at the places thought most convenient, as near streams of water in the rear of the army, and without the reach of cannon shot; and are composed of materials carried along with the army and in readiness for being put together. To each of these hospitals belong a certain number of carriages, provided with every thing wanted for the relief and cure of the wounded.

To conclude; the medical faculty of the Spanish army seem to be organized in the most judicious manner, maintain a high degree of respectability, and enjoy the good will of the people as well as the patronage of the government.

REGULATIONS RESPECTING THE MINERAL BATHS AND SPRINGS OF SPAIN.

Not the least of the praiseworthy acts of the late king, was that for the proper regulation of the mineral baths and springs in his kingdom, and for the good government of the faculty, as well as of the sick, and the owners and servants, and all other persons who may resort to them for any purpose whatever.

These regulations have been in existence since 1816, but were remodelled in 1828, by the royal superior governing junta of medicine and surgery; and having been approved by the king were made known and circulated by Calamarde, the president of the junta, in the month of October of that year. In February, 1834, by another royal order some modifications were made in them, and to the junta was assigned the general direction and inspection of all the mineral baths and springs in Spain; but the special direction and inspection of them are given to the faculty who have charge of their management, and who are termed special directors. These are generally *medico-cirujanos*, the preference being given to them, though physicians are appointed if the former are not to be had.

All persons offering themselves as candidates for the office of director are required to undergo a practical examination of their professional qualifications, to present dissertations in Spanish upon the physical and chemical properties of the water of the establishment to which they aspire, and also a topographical account of the country in which it is situated.

The examination is held either in a college or hospital, in presence of the censors, and at the bedside of some person affected with some disease. Of this each candidate has to ascertain and make known the precise condition; and having done this he is required to give a complete history of the disease, and then to hear

the observations of his competitors. The junta appoints the censors for the examination, and directs where it is to take place.

The examination being terminated, the merits of the candidates are communicated to the junta, and through it and the minister who patronise the names of the three most meritorious are made known to the sovereign, who appoints one of the three a director. The appointment is immediately made known by the minister to the sub-delegate, and by him to the magistrate of the district in which the establishment is located, and the owner having been informed of the appointment, provides gratis suitable accommodations for the director.

For his services, which are continued during the season for using the waters, he receives from government eight thousand reals a-year, which are paid from the treasury of estates and taxes. Should he become sick or die during the season, the junta appoints a provisional substitute, who is paid at the rate of eight thousand reals a-year, and receives five days' pay for travelling expenses. If the director die either within the season, or after it is over, the magistrate of the district is required to give instantly notice of it to the intendant of the province and the junta, so that the vacancy occasioned by the death of the director may be filled. Two months before the period of using the water begins, the junta gives notice thereof, and takes care that the directors proceed to their places of destination before the appointed time, and remain at them the whole season, in the performance of their duties.

The junta also keeps up a correspondence with the directors, receives their memoirs, and remits them for examination to any academy it may think proper. The academy having examined, returns them with their approbation or censure to the junta. Another duty of the junta is to make a summary from these memoirs, and to publish all the useful and topographical, physical, chemical, and medical information they contain. It is likewise required to make known to the government the improvements wanted at the different watering-places, and the vices prevalent there, with the means of correction; to consult it concerning the transfer of the directors from one place to another, and to report to it any director who should not fulfil the duties required of him by the regulations. For such neglect the director is liable to be mulcted in a part, or the whole, of his salary; or, should it be recommended, he is dismissed from office without receiving any compensation for his services. After all, the most important persons attached to the watering-places are the directors. They reside at or near the watering-places, have the general supervision over them, and establish their medical police, with which no one, not even a magistrate, has the right to interfere. They also daily inspect the baths, fountains, and other things; and exact of the patients a verbal or written account of their disorders, examine them, ascertain their condition, prescribe for them, and direct how and when they are to use the waters. For every prescription they are entitled to ten reals, except from poor patients,

whom they are bound, notwithstanding, to attend as punctually as the wealthy.

It is, moreover, the duty of the directors to make observations on the effects produced by bathing in, or drinking the waters; to keep a diary of important cases; to note the age, sex, temperament, and the previous diseases of their patients; to ascertain those which brought them to the springs, to correspond with them when they return home, in order that the good or bad effects of the waters may be more certainly known; to keep an account of all the cases, to arrange them in classes, to note the results; to preserve the prescriptions given; to observe barometrical and thermometrical changes, and their influence on the sick; to write the topography of the country adjacent the springs—to give its natural and medical history, examine the physical and chemical properties of the waters; to attend to the cleanliness, commodiousness, and provisions of the establishments; and, finally, to supervise whatever belongs to their medical or moral police. Should they not be able to enforce their regulations and maintain order, they can demand the assistance of the judge and governor of the territory, and these in no manner are excused from giving the necessary aid. If they refuse either assistance or protection, they are punished as disobedient to the orders of her majesty. It is the duty of the judge or governor, to order there the nearest apothecary or pharmaceutist, should one be wanting at the establishment, to furnish the medicines required by the physician. The value of the medicines is paid by the patients.

When a director gets sick he is bound to obtain a substitute, but if his disease should be such as to prevent this, then the civil authority most immediate attends to it, and without loss of time informs the royal junta. For his services the substitute receives the pay mentioned, without however any deduction being made from that of the director. This pay comes from the tax fund of the province. Besides the salary of 8000 reals, the director may receive for important and distinguished services any additional compensation to which the junta thinks him entitled. For the benefit of the widows and children of those deceased, six months' pay is deducted from the salary of every director, and deposited in the bank of annuities, called the Montepio: all tax-gatherers, intendentes, and accountants are forbidden from hindering this fund being used for the purpose specified.

The directors are obliged to obey any order of the junta transmitted by its secretary concerning epidemics, or relating to any other important matters, and to communicate by him to the junta the discovery of any new mineral waters in their respective provinces.

The season of bathing in, or taking the water having ended, each director is at liberty to take up his residence where he may think fit, but must notify the junta thereof. When his residence has been chosen, he is required to make out and transmit to the junta, before or by the end of the following December, all his notices and

observations, clearly and methodically arranged in one or more Memoirs; at the same time he has to report the condition of the fountains, baths, stoves, roads, and edifices belonging to the establishment under his charge; to make known any defects, and suggest the means of remedy.

The regulations for the government of the owners, managers, major domos, and lessors, of the watering-places are equally as strict as the preceding. The owners are not allowed to admit any person without a ticket signed by the director. They have to obey all his orders relative to the medical police, and to keep the baths, fountains, utensils, houses, &c., in a good condition. If they should neglect to make repairs, a tenth part of their profits can be appropriated by the directors for that purpose, every year, until they are completed.

The managers, major domos, and lessors, attend likewise to the preservation of the establishments, and to the collection from the sick of the money due for their lodging, food, baths, and other things. The charges are made according to a schedule formed at the commencement of the season and approved by the proper authority. In this schedule is put down the fees due servants for bathing and other services, agreeably to the judgment of the director.

All servants are obliged to attend strictly to the orders of the directors respecting the manner of furnishing the water, bathing the sick, and other matters. Should they neglect their duty, they are reprimanded or dismissed by the directors. The bathers attend exclusively to the baths, regulate their temperature, and administer them at the hours specified by the director. They, as well as all other servants, have to attend on the poor patients with as much care as on the wealthy; and are not allowed for such service to make any charge. If there is a hospital or other edifice for the reception of the poor, the wages of servants, and their other expences, are defrayed at the public charge. The bathers are appointed by the directors, and required to read, understand the use of the thermometer and to be males or females according to the sex of the patients; but as it is difficult to procure females well qualified, the male bathers have the chief direction of the baths, and give orders to the former.

The patients are not exempt from rules and regulations. They are enjoined to obey the prescriptions of the directors; to drink the waters; to take the baths hot or cold, as the directors think fit to order, and to pay the fees according to their circumstances, the usages of the places where they are, and to the services rendered. They are especially enjoined to use the waters as directed—that their virtues may be more correctly ascertained; and are forbidden to consult physicians not belonging to the establisments; that is, any others than the directors. Should any other of the faculty advise or prescribe for them they will be admonished for the first offence, and fined for a second one the sum of twenty-five ducats: but should the offence be again committed the fine is doubled, and the intruders are expelled from the neighbourhood.

Finally, if the springs are situated in the open country, if there are no accommodations at them, and the sick have to lodge in the adjacent huts, cottages, and other habitations, they are still subjected to the foregoing regulations. Every person resorting to any one of these habitations for the use of the water, must, on the first or second day after his arrival, obtain from the director a ticket, present it to the proper authority, and procure a permit to continue in the place. If the owners of the springs or habitations should entertain any person in violation of the above mandate, they will severally incur a fine of ten ducats, or of a greater sum in case of a repetition of the offence.

Much can be said in praise of these regulations. They are in many respects excellent, and well adapted to attain the objects for which they are designed. Notwithstanding they are somewhat objectionable; for they are too arbitrary and despotic, and savor too strongly of monarchy to be adopted in this country, the people of which would never permit the government to control in such a manner their watering-places, where they are much more in the habit of resorting to for pleasure than to get cured of any disease. They would by no means allow the president, the governor of a State, or any other officer to interfere in the management of these places, and to inflict punishment for a violation of the regulations, not only at them but in their neighbourhood.

We must admit, however, that some of these regulations if adopted at our watering-places would vastly contribute to the comfort, if not to the health of those persons who frequent them. How common is it to find the houses at them illy-planned, badly kept, and crowded by persons in full health to the exclusion of those who are sick? Do we not see at them the food of bad quality and illy-cooked, the servants inattentive, save to those who fee them most, the physicians transitory and imperfectly supplied with medicines and other things needed by their patients; and both healthy and the sickly using the waters at their own discretion, and often with the most serious injury? Are not the infirm frequently put into the worst apartments, and even deprived of beds on account of the most hale and strong? Every visitor to our watering-places must answer some of these queries in the affirmative: and, besides, he must have witnessed at them the most riotous conduct, which not only interfered with the comfort of the healthy—but retarded the recovery of the infirm.

The most commendable part of these regulations, I think, is that providing for the benefit of the indigent invalids who resort to the mineral waters, and securing them from improper treatment; for we know that in this and other countries they are almost excluded from their use, and that these waters are in great part monopolized by the wealthy. This every person must admit to be wrong, as poverty is no crime, and the virtues of mineral waters were designed by Heaven for the benefit of all mankind, and not for that of a small number of persons on whom fortune has smiled.

MINORCA.

Among the numerous islands distributed through the Mediterranean, few or none are more worthy of notice than this one. Its size, fertility, convenient location between Spain and Italy, and between France and her African possessions, and its secure and commodious harbours, especially that of Mahon, render it an island of great importance to the European powers. Nor is it much less desirable to the United States, as it has always been found the most convenient rendezvous for our squadron.

Minorca, according to Spanish calculations, lies between latitude 39° 47', and 40° 41' 45" N.; and between long. 10° 9' 20", and 10° 42' 15" to the east of Cadiz. Its form is an irregular parallelogram, and it runs nearly N.W. and S.E. In length it is nearly thirty miles, and in breadth from eight to twelve: the latter varying from the indentations of the sea. It contains two hundred and thirty-six square miles agreeably to common measurement, but probably more from its being uniformly hilly and mountainous, and marked by deep valleys and hollows.

The chief mountains are Santa Agata and Mount Toro, the latter of which is the highest—being two thousand feet above the level of the sea—stands in the centre of the island, may be seen from thirty to forty miles, and is known to mariners by its conoidal shape, and the convent crowning its summit. There is a difference, however, in the form of the northern and southern extremities of this island, and between the eastern and western coasts. It is more hilly and mountainous at the north end, and as low and smooth to the west as it is high and rugged to the east. The last named circumstance is very rationally attributed to the eastern shore being exposed to the continual violence of the northerly winds blowing down the ever boisterous Gulf of Lyons.

Climate.—Minorca being situated about midway between the highest and lowest degree of latitude of the western portion of the Mediterranean, possesses a medium temperate, neither having as great heat as the one nor as much cold as the other. During the frequent visits I made to this island in the years 1831, 1832, 1833, 1836, 1837, and 1838, and which included the period of five hundred and three days, the greatest rise of Fahrenheit's thermometer did not exceed 84°, nor the greatest depression reach below 42°. The air was of the former temperature only three times during the first cruise; that is on the 13th of June 1831, and on August the 10th, and September 6th, 1832. During the second cruise the thermometer did not attain at any time higher than 83°, and that only once in September 1837, and again in August 1838. The greatest cold occurred on the 2d of January 1833, and in February and March 1837, the temperature having varied at the latter periods from 42° to 48° for six days in succession, a circumstance never before nor afterwards witnessed, and which must be considered altogether unusual.

It is unnecessary for me to give the minutiæ of the temperature; and I will close my remarks concerning it, by stating, that the average temperature of the air in Minorca may be fixed at 78° for the summer, at 60° for the winter, and at 69° for the spring and autumn. It was liable, however, to great variations during the two last seasons, for it will be seen by reference to the subjoined summary of my register, that the occurrence of the greatest degree of cold and heat was not confined to any particular months or seasons, but that the former sometimes happened in the spring and the latter in the autumn. Indeed, with regard to cold, judging from what it was in March 1832, 1833, and 1837, I believe it to be on an average greater in that than in any other month, and it may be properly accounted for by the prevalence and violence of the northerly winds, particularly of the north-easterly, which drive before them at that time deluges of rain, and occasionally abundance of hail and snow. For instance, in March, 1837, when there were more successively cold days than at any other time, and the average temperature was lowest, being, as seen in the subjoined table 53½°, the wind blue uninterruptedly for six days from the north-east, five days at intervals from the same direction, and two days from the north. During the same month, there were twelve days of rain, one of hail, one of snow; and seven cloudy days.

Of the subjoined table, I should mention, that, though the average temperature is given by months, I was not in Minorca the whole of each month mentioned; that I was there sometimes at the beginning, or the middle, or at the last of some of them, and that the second number of the fraction generally indicates the number of days. In this respect then the table must be considered inaccurate; but, nevertheless, from my having been there at some period the whole of each month in the year, with a few exceptions, this table will afford very nearly a correct knowledge of the subject in consideration.

		Average temperature.
1831.		
	June	80° 6/13
	October	74° 3/13
	November	62° 10/30
	December	64° 10/20
1832.		
	March	59° 10/14
	April	64° 10/16
	May	70°
	June	76° 14/23
	August	79° 4/31
	September	81° 7/11
	December	60° 3/7
1833.		
	January	59° 4/31
	February	60° 7/19
	March	58° 4/11
	April	63° 9/13
	October	73° 16/17
1836.		
	July	77° 4/10
	October	59° 5/6
	November	61° 6/30
	December	62° 2/31
1837.		
	February	55°
	March	53° 1/2
	April	61° 4/23
	September	74° 7/19
	October	56° 5/31
	November	63° 13/17
	December	60° 5/25
1838.		
	April	62° 4/10
	August	77° 21/31
	September	73°

The above is the summary of the two registers kept chiefly by myself, and the temperature was taken at noon and in the shade—first in the ward-room of the John Adams, near the hatch; secondly on the gun-deck of the United States, near the ports. In these two places, I think the temperature was commonly nearly the same, except when the hatch was closed. Whenever this occurred I removed the thermometer to another suitable place, so that the temperature was observed as precisely in the same manner as was possible. It may be thought that the thermometer being kept aboard ship a correct estimate could not have been made, but we should recollect that on shore there are always many objects, which, by their reflecting the rays of light and heat, cause a variation in the result, accordingly as they are put in different places: whereas, on water there is always great uniformity in temperature, there being nothing besides the water to cause reflection. Enough being said on this subject, I will proceed to speak of the winds. The most common of these are the south-east, south-west, west, north-west, and north-east; but the two last are by far the most so. The north-east, however, is the most constant, and blows longer than any of them. During the last cruise it blew ninety-six days out of the two hundred and sixty which we spent at Port Mahon, or more than a third of the time. In the summer this wind is mostly accompanied with a clear, blue sky, or a few flying clouds, unattended with rain, but at other seasons, more especially in the spring, it is often accompanied with rain, and sometimes with hail and snow. When this wind comes more from the eastward the weather is very damp, and showers fall more frequently. This kind of weather is said always to happen either a little after or during the holy week. This I have observed myself, and was told by one of the oldest and best pilots; and it is a fact of such notoriety, that this wind is called the Jew's wind—*el viento de los Judios*.—When it begins to blow, the people say "*los Judios se ven*," —"the Jews are coming," and await with resignation until it has expired, the rain ceased, the clouds dispersed, and the heavens have resumed their wonted serenity.

In the autumn the west and north-west wind blow rather more regularly than the north-east. In November, 1836, it blew from west to north, twenty-six days—and in November, 1837, fourteen days directly from the north-west, giving thereby to that month a lower temperature than that of the following December.

With respect to rain, it may be stated that it oftenest occurs when the winds are southerly, and is hardly known from May to September. As the autumnal equinox approaches, the weather becomes cloudy, showers begin to fall, and more commonly at night; the sunburnt earth recovers its moisture, vegetation revives, flowers sprout forth, and continue to flourish until the drought of the next summer. The rains are rarely constant or very heavy, and hardly ever attended by thunder and lightning. Such thunder storms as are common in this country during hot weather are

entirely unknown in Minorca at any season, nor have I ever heard of a death by lightning in the island. This freedom from the ill effects of electricity is attributable to there being few high points of land to attract the clouds, which are usually transitory, and are soon driven by the winds over the island. How far the great scarcity of iron ore tends to this deficit of the electric fluid is a question to be decided, though I think it probable that it may in a measure have the effect of preventing the display of electric phenomena. Regarding dews, I will only state that they are neither remarkably light nor heavy; and of the climate, I will merely mention one more fact, which is, that as long and as often as I have been in Minorca, I have never witnessed a fog, and seldom what can be properly called a mist; the atmosphere either having been clear, or more or less cloudy.

To come to a conclusion, then: I consider the climate in most respects excellent, and although rather enervating from its mildness, yet, taken altogether, as good as that of most other parts of the Mediterranean, or of the surrounding regions.

Minerals.—This island is singularly destitute of them. Lead, iron, and copper, are the only ones which have been found in any quantity, and these are so scarce that the mines have never been worked to advantage, the products not having been sufficient to defray the expenses. Lately, it is said, iron ore has been discovered near the centre of the island in abundance, but as yet it has not been manufactured, though from a specimen in my possession it is very pure and of the finest quality. A lead mine in the vicinity of Alayor, and another in that of Port Mahon, many years ago, yielded enough to supply the potters with materials for glazing; at this time, however, they are abandoned, and their existence forgotten.

Geology.—Minorca presents some volcanic remains, the chief of which is a blackish grey lava, like that of Mount Ætna, being very hard, heavy, and composed of crystals, generally small, and of shining fracture.

The island mainly consists of limestone, which is chiefly secondary; also of slate of various qualities, and a granite stone of a dark colour, disposed in strata or in irregular masses, and having many fissures dividing it into cuboidal fragments.

The limestone composes the western, and the slate and granite the eastern half of the island. To this circumstance is chiefly owing the great difference in the fertility of the eastern and western sides; the latter being as rich and productive as the former is poor and unproductive. The limestone is mostly very soft and sandy, lies a few feet beneath the surface of the earth, and is disposed in strata of prodigious extent, and often many feet in thickness. When fresh, it is of a yellowish-white colour, and so soft that it is easily cut with pick and broad axes, but on exposure becomes dark-grey, and of considerable hardness, unless it contains an unusual quantity of sand, in which case it retains its whiteness, and quickly crumbles and dissolves whenever it rains. Of this limestone, troughs, gutters,

dripstones and the houses are made, and more cheaply than they would be of any other material. For building, it is cut into blocks about two feet long, one foot thick, and one broad. These blocks can be purchased for forty cents a dozen. This may seem surprizingly and incredibly cheap, but will no longer appear so, when it is known that a labourer may be had for from ten to twenty cents a day.

The ordinary method of quarrying is to remove the earth from the rock, cut away with pick axes the upper and softer portions, then to cut downwards in vertical lines, split off the blocks horizontally, and hew them smooth with the broad axe. When it is desirable to save the trouble of removing the earth, after making a vertical cut they work horizontally, and leave merely enough of the rock to serve for pillars of support to the superincumbent earth. In this manner mines of vast extent are made, and the great excavations of Fort Saint Philip, for which so much blood has been spilt by the French, English, and Spaniards, were formed.

In this soft, are found imbedded spherical masses of pure, hard, greyish limestone, which is sometimes crystallized.

The lofty cliffs extending along the western side of the harbour of Mahon are principally composed of the former, arranged in strata, which present their edges, and are like pieces of cork long exposed to the air. Beneath these strata are others, consisting of alternate layers of soft, sandy pebbles, with some small rock crystals, and of soft, yellow, and red rocks. The pebbles are from the size of a black walnut to that of an orange, of a greyish-yellow colour, and crumble upon being touched. They are often imbedded in the limestone, from which they moulder away on being exposed to the weather, leaving their impression behind. The super-structure of these cliffs, being heavier and more compact than the parts beneath, remain firm, while the latter moulder away, and failing to give the necessary and wonted support, occasion immense masses of the former to break off, and, tumbling down the precipices, to dash every thing from before them. Some years ago, several houses on the marina of Mahon were knocked down, and entirely crushed in this manner. To prevent similar accidents, walls have been built by some persons at the back of their houses to give support to the cliffs, which by falling might not only destroy the houses beneath them, but those built above and upon the top of the cliffs.

On the eastern side of the harbour, excepting the peninsula on which stand the lazaretto, there is no limestone of any description to be found but slate, and the granitic stone mentioned, alone are to be seen either in loose fragments or extensive beds and rocks, disposed in oblique or horizontal strata, or forming confused heaps.

Rat Rey and Quarantine islands are of similar structure to the western side of the harbour, and seem to have once formed a part of it; for their strata of lime stone, &c., precisely correspond, save in height. Both of these islands, and the harbour itself, it is probable, were formed by a tremendous earthquake, which

rent the southern extremity of the island in twain, let in the sea, and has left them as everlasting monuments of its power.

Soil.—Great differences exist in the soil of Minorca. That of the hills is mostly rocky, dry, and poor; that of the valleys, alluvial, moist, and rich There is likewise a strong contrast between the soil of the eastern and western sides of the island; to which fact, and the cause of it, I have already alluded. The soil indeed of the eastern side is so bad that it produces only a little wheat or Indian corn, and a few dwarf olive trees; so that this portion of the island is almost entirely overgrown with myrtle, has some of its hills covered with the *cactus opuntia*, and is generally too barren to support animal or vegetable life.

On the contrary, the soil of the western side is clayey, mouldy, light, and porous on the hills, and altogether so fertile that, with little labour or manuring, it produces, abundantly, grain, fruit, and vegetables of almost every kind; even the bottom of the quarries being used for gardens after the removal of the stone. But nevertheless there is a difference between the fertility of the hills and valleys, the latter being much more productive, especially in fruits and vegetables. This is to be accounted for by the washing of the soil from the hills, during the rainy seasons. However, this is now prevented in a great measure by the erection of terraces, which, catching the earth as it washes away, are seen forming plains upon the greatest declivities.

Before quitting geological considerations, I would observe that sulphate of lime, stalactites, alabaster, and several other sorts of marble, have been found, but in such small quantity that they do not deserve detailed notice.

Botany.—Minorca is much richer in vegetable than in mineral productions, and abounds in medicinal and other plants. I cannot undertake to enumerate more than the principal ones, and shall divide them into two classes; exotic and indigenous.* Among the exotic medicinal plants are the *solanum nigrum* and *brutosum*, the *chenopodium anthelmenticum*, the *aloes vulgaris*,† *cucumis agrestis*, *phytolacca decandra*,‡ *ricinus communis*, and *capsicum annuum*.

All these plants have been imported at different periods; some by the natives, others by the English and other foreigners, and are found in greater or less quantities, growing either wild or in yards and gardens about Mahon. The *solanum nigrum* is scarce, the *solanum brutosum* very abundant, being found in every part, but especially within and around the lazaretto, where it is seen flourishing winter and summer. Mr. Venent, a very aged man, being between eighty and ninety years old, formerly apothecary to the military hospital, now director of the *Miseracordia de Esposito*s, or foundling hospital, informed me that the seeds of this plant were brought from England by an English colonel, as long as sixty years ago; and having been sowed, had become common. This plant grows to the height

* For a list of most of them, see Cleghorn on Minorca.

† See Plate II., fig. 5.

‡ See Plate II., fig. 4, which represents the fruit half grown.

of four or five feet, has a woody, branched stem; large, spiny leaves of a dark green colour, and shaped like those of the tomato plant; and bears a bluish purple flower, and a berry from one to two inches in circumference. The berry is green, striped, and spotted with white when immature; and yellow when ripe. It is filled with small seed, which have narcotic properties. Mr. Venent stated that the children of the *Miseracordia*, not long since having gathered some of the berries, and put them in their olio, were subsequently seized with delirium, convulsions, and other symptoms of narcotic poisoning.

The *chenopodium* is neither so large nor so powerful as that of the United States; the aloes is not used medicinally; the *cucumis agrestis* grows chiefly within the lazaretto, and comes to perfection, but is not at all, or very little employed, being allowed to grow and wither without notice. As for the *phytolacca* and *ricinus* they are common, but the latter is particularly so, and is raised in sufficient quantity to supply the island with castor oil. The seeds are smaller than those of this country, but yield oil of the best quality, it being obtained by cold expression. The *phytolacca* is not, that I know of, included in the *materia medica* of the Minorcan physicians, who either do not appreciate, or are not acquainted with its medicinal virtues.

The principal indigenous medicinal plants, are the *mentha pulegium, viridis*, and *piperita;* five species of *euphorbia*, the *pistacia lentiscus,** *leontodon taraxacum*, the *salvia, malvia*, and *althæa officinalis*, the *fœniculum, rhamnus zisyphus, arum maculatum, scilla maritima, vinca-per-vinca* or *pruenga*, and many more of less efficacy.

The *mentha pulegium* and *piperita* are scarce; the *mentha viridis* is plentiful only upon the banks of rivulets; but the *euphorbiæ* are very abundant. They begin sprouting forth on the hill sides, beneath the cliffs, and on other parts in the autumn, and by winter are seen in large and thick patches, forming a beautiful yellowish green covering with their flowers and foliage. Their stems when broken pour forth a copious, milk-white, tenacious juice, which creates irritation and burning of the skin when it is applied. The *pistacia lentiscus* does not come to perfection, yielding little or no mastic; but its berries contain a good deal of oil, which is used for lights by some persons. This tree grows upon the hills, attains the height of ten or twelve feet, has a compound leaf formed of six or eight lanceolate leaflets, and bears a red aromatic berry the size of a buck-shot.† It is said to exude its mastic when the weather is very hot, but I was unable to procure a specimen either through others or by searching for it myself in the middle of September, when the weather was as hot as at any other time. That some is produced, however, I have no doubt, as I have understood so from the best authority, that of Mr. Sintes, apothecary to the squadron, who with a thorough knowledge of his business unites extensive botanical attainments.

* See Plate II., fig. 3.

† See Plate III, fig. 2.

The *rhamnus zisyphus, ginjola* or *jujube* tree, bears the fruit called by the Minorcans *gingols*, which is more valuable for their esculent than healing properties. This tree is found in the gardens; has spreading, pendulous limbs; resembles the locust, having thorny branches, compound leaves, formed of many leaflets; and attains the height of fifteen or sixteen feet. Its fruit when ripe is of a reddish brown colour, and about as large as the damson of our country. It is slightly cylindrical in shape, has a sweet mucilaginous flavour, and contains a single stone.

The *arum maculatum* is not common, and is not employed. As for the *scilla maritima*, it is not to be found in some parts of the island, and is very abundant in others. Towards the south-east part, near the harbour of Cala Taulera, I met with it in every stage of growth, and of all sizes, growing among the stones, and upon the sterile, uncultivated grounds. The *pruenga* bears a blue flower, belongs to the class *hexandria*, and order *monogynia*, and is recommended for the cure of scorbutic affections. Other medicinal plants, as thyme, garlick, wormwood, colchicum, cicuta, and stramonium, might be mentioned; but as the first three need no remarks, and I did not meet with the last, I will say no more of them, and will proceed to speak of plants not medicinal. They, however, are so numerous that only some of them will be mentioned.

In the first place, most of the vegetables found on our tables are raised in great plenty; such as celery, parsley, lettuce, radishes, parsnips, salsify, turnips, beets, potatoes, squashes, cabbages, cauliflowers, onions, cucumbers, pumpkins, asparagus, artichokes, carrots, egg-plants, &c. The onions and cauliflowers are uncommonly large, and famous for their excellence of flavour.

With fruit the inhabitants are no less favoured; and among them are pears, peaches, apples, quinces, pomegranates, citrons, lemons, oranges, figs, apricots, prunes, greengages, mulberries, watermelons, muskmelons, cantelopes, and the most delicious cherries; among the dried fruits are filberts, and *pistachio* nuts; the *pistacia vera* being found growing to perfection in some gardens, but it is exotic, and said to have been imported from Tunis. When the first attempt was made to raise this tree it produced no fruit, in consequence of its not being known that it was necessary to plant the male and female together. This being now known and practised, no difficulty is experienced in getting the females to bear fruit, and is had in perfection. The trees I saw were nearly twenty feet high. The male had leaves composed of three leaflets, and the female leaves composed of five of them; save occasionally a single ovate leaf at the end of a branch. The fruit grows in clusters slightly attached to peduncles two or more inches in length, and is of a bright red colour.

Both the olive and wild olive tree are common; but the latter is small, either from neglect, the climate, or the unfitness of the soil. Hence, neither olives nor olive oil are plentiful enough even for the consumption of the islanders, and they cannot, of course, be exported for foreign consumption.

In enumerating the fruit I should not omit that of the *cactus*

opuntia, or the prickly pear, a most important one to the poorer classes, who consume vast quantities of it, as it is very abundant and one of the cheapest articles of food. This plant usually grows along, and upon the stone fences, but likewise on craggy, barren hills; either irregularly and spontaneously, or regularly and planted in rows, as may be seen upon the eastern side of Port Mahon upon the estate of the Golden Farmer. The fruit ripens in August and September. It is carried about for sale in panniers placed upon mules, and eaten alone or with milk.

Nor ought I to omit the almond, which is eaten both green and dried; nor the bright red and luscious strawberry, growing wild, and enticing the traveller to turn aside and retard his journey; nor the exquisite grapes, both red and white, bearing down the vines and props with their weight.

The red or purple grapes are the largest, singly or collectively; but the white are the sweetest and most agreeable to the palate. The red is by far the most abundant, and most used for making wine. The vintage begins in the middle of September. Then all is bustle and animation; the roads and the streets, are filled with droves of mules, loaded with deep, flattened, two-handled tubs, containing the precious fruit; the pavements are covered with the hulls, and discolored with the purple juice; the air is scented with the fumes of the new wine; and the people are seen engaged in cleansing and coopering their oft-used barrels and hogsheads.

The ordinary mode of manufacturing wine is the following:—

The grapes are thrown into a large, square, plank strainer with a grated bottom, and are there crushed, by the naked feet of a man who tramples upon them, until they are reduced to a mass. The juice having passed through the grate falls into a vessel beneath. From this it is removed into another strainer with a bottom of coarse, spear grass, laid horizontally; and having passed through it into another vessel, the fluid is put into a cask with its head knocked out, and there allowed to remain until fermentation has taken place, which is within fifteen or twenty days. All the skins, stems, and other impurities, having been removed from the surface, the wine is drawn off into another cask with its head in, and laid upon its side, and is permitted to complete the fermentative process. To allow the carbonic acid to escape the bung is left open; but to prevent the acidifying action of the atmosphere is covered by a pile of stems. At the end of fifteen days, the gas having ceased to form and escape, the bung is permanently closed. Some persons keep it open only ten days, then stop it, and bore a gimlet hole near it for the escape of the gas. This hole is also closed at the expiration of ten days. Other persons, to purify the wine, and make it keep better, before closing the bung throw in a few lumps of alum salt. The skins having been taken from the strainer, are put into a press and deprived of their unexpressed juice by powerful compression made upon them by blocks of wood or stone, urged downwards by a large wooden screw turned with bars. These are worked by the hands alone, or with

pulleys and ropes. The last mode of compression is much the best; a single man by means of the pulleys being able to exercise as much power as several men using their unassisted strength.

The presses are generally square, but sometimes round. The finest I saw was of the latter form; its body being made of vertical staves with interstices between them: it held about a pipe, and rested on a block of stone, with a gutter around it for the expressed juice to flow into the receiver beneath. The staves were held together by strong hoops of iron, and compression was made by a screw resting on a block of stone, and worked by two pulleys and a rope, one end of which was tied to a bar or lever, the other coiled around a windlass with four handles, and turned by only one person.

Open casks are mostly used for fermentation, but in one of the largest manufactories the juice is put into immense tanks hollowed out of the rock on which the house stands, and there retained until fermentation is finished. To prevent the juice from being absorbed by the rock the tanks are lined with impermeable plaster. After fermentation has ceased the wine is drawn out and put into casks. To retard the vinous, and prevent the acetous fermentation, the mouths of the tanks are closed by conical tin covers placed in vessels filled with water, which have leaden pipes at their apices. The ends of the pipes being beneath the water, the gas escapes slowly through it without permitting the access of the least air into the tanks.

In this manufactory, in order to make sweet white wine the juice is partly boiled down in a copper vessel before it is fermented. Here, likewise, vinegar was made by pouring water upon the skins and stems, and letting them ferment; and brandy was manufactured by grinding the grapes, stems and all, by a mill formed of two horizontal cylinders of fluted wood, allowing the juice to run into a tank beneath, and after fermentation subjecting it to distillation.

Of the cheapness of wine one may judge by the price of grapes, which are sold and delivered for six Minorcan reals, or sixty cents a quintal, consisting of four arrobes, each of twenty-six pounds.* Grapes, then, are worth only a little more than a half cent a-pound. The common price of red wine is five dollars a quarter cask; and that consumed by the lower orders is still cheaper. When prepared with care, and it has become old, this wine is quite equal to claret, and is much esteemed; being mild, smooth, and free from alcohol, save that formed when it is made.

Having enumerated the fruits, I might mention still more flowers, but will merely state that the rose, lilly, tulip, honeysuckle, jasmin, red poppy, hyacinth, daisy, and a variety of geraniums, enamel the fields and adorn the gardens. Nor ought I to neglect to state that the *cactus grandi-flora* is in some of the latter stretching forth its slender, trebly-fluted branches, and expanding at distant periods its magnificent flowers.

* The Minorcan arrobe has one more pound than the Spanish.

Respecting garden trees enough has been said in speaking of their fruits, but there are two others also worthy of notice—the palm, and a locust, bearing a yellow, delightfully flagrant flower, and a small black legume. The palm bears no dates; and both trees are scarce.

Of forest trees not much can be written, as they are not numerous in species, and are neither remarkable for abundance nor grandeur. On the contrary they are scarce and dwarfish, both the soil and climate appearing illy-adapted to their growth. The chief of them are the myrtle,* pine, and *quercus ilex*,† which is valuable for its shade, wood, and acorns—the food of the poor in times of scarcity and famine.

The myrtle spreads over the uncultivated land, and is extremely useful; its branches serving when dry for heating ovens, and its knotted roots supplying an excellent fuel. Moreover, its leaves are sweetly odoriferous, and its berries are said to have served for nutriment at remote periods, when the wretched inhabitants were deprived of the ordinary articles of sustenance.

ANIMAL KINGDOM.

In Minorca there are no beasts of prey, and almost the only wild animals are the rabbit and hedge-hog. The domestic animals are horses, mules, asses, hogs, sheep, goats and cattle. Of these, the mules, asses, and goats, are most numerous. Horses are used chiefly for riding, seldom or never for ploughing and hauling any kind of vehicle; for carts, wagons, and carriages, are hardly known. I certainly did not meet with a single one of them. Asses and mules convey all burdens, and are by much the most valuable animals, being hardy, requiring little food, and that of the poorest sort. The hogs are of a small breed, but very plump and fat, and afford much the finest meat to be had. It is used fresh, or made into bacon and sausages, of which the most liked by the natives is the *sobreassado*, vulgarly called *soposado*. This is a large sausage, coloured by saffron, and preserved by drying and high seasoning. Goats are most valuable for their milk, which is more drunk than any other, and is likewise made into cheese. The cattle are small and lean, and furnish neither good beef nor milk, pasturage being scarce and poor. Butter, of course, is both bad and scarce, indeed it is often not to be purchased for any price either in town or in the country.

Birds.—These are numerous and of various classes. Among the *accipitres*, are hawks, falcons, and eagles; and among the *passerinæ*, swallows, thrushes, *becaficos*, bee-eaters, kingfishers, and larks. Of the *gallinacea*, are the domestic fowls, turkeys, red-legged partridges, and pigeons. The fowls are famed for their size and excellence, as well as for the very great size and fineness of their eggs; the turkeys are small and well flavoured, though not as good as our own; the partridges are two or three times larger than the partridges of this country, but their flesh is dryer, and inferior in flavour.

* See Plate II., fig. 1. † See Plate II., fig. 2.

The pigeons are of two kinds, one of small, the other of very large size. The squabs of both form a delicious food. Belonging to the *grallatoriæ*, are found cranes, snipes, woodcocks and rails. The woodcocks are of large size, fat, and more savoury than any other game; they make their appearance upon the island in the fall, commonly about the last of October, and continue plentiful until spring, when they disappear. Great numbers of them are consumed, not only on the island, but also in France; the steamers which touch there laying in as many as can be had, and carrying them to Toulon and Marseilles for sale. Since this trade began they have become much scarcer and dearer in market; the price being sometimes double of what it was anteriorly.

Of the *scansoriæ*, having met with parrots alone, and these being imported, I shall say no more of them, and will pass on to the *palmipedes*, of which order, in and about the island, are to be found a variety of gulls; the domestic, and now and then it is said the wild goose, though I saw none; the tame, and several kinds of wild duck, as a brownish-black one, which is of medium dimensions; and a species of teal, very small and extremely expert in diving. The wild ducks are not numerous, and are ordinarily shot in pairs upon the harbours, or upon the ponds within the interior.

I will conclude my observations of the beasts and birds by mentioning, that in the history of Minorca it is stated, that when General Kane of the British army became its governor, which was somewhere near 1715, the island having been stripped of cattle and game—goats alone being encountered, and eagles, which nested among the rocks—he caused eggs, birds, sheep, and cattle, to be brought from France, Italy, and Barbary, and distributing them among the labourers and peasants encouraged them to raise and perpetuate their species. Since then, they have been plentiful.

Reptiles.—They are small in number. The frog, terrapin, lizard, scorpion, and two species of serpents—the viper and water snake—are the only ones, and of these the lizard alone is common. The viper and scorpion are said to be poisonous, as elsewhere, but no case of death from either of them has come to my knowledge.

Fish.—There are many kinds of them caught around the island and within the harbours, but the water being mostly very deep, and no creeks, rivers, nor banks for them to resort to, none, save some of the smallest fish, are caught in any quantity, and these only when the weather is not too boisterous for their boats, an event of rare occurrence, as they are large, strongly built, well manned, and constructed like whale boats, being sharp at each end. The best and largest fish found in market is what is called sheepshead, but differing from ours in being more slender, and having a smaller head. The carp; a species of rockfish, of much inferior size to ours; the flounder, sucker, sardinas, and anchovy, are likewise to be generally purchased.

Of the *crustacea* and the *mollusca* are found a very small crab, the oyster, clam, a craw fish nearly as large as our lobster, several species of cockles and snails; also the pholas dactylus—datyl or

date fish—a small species of conch, covered by a yellowish-red, velvet-like membrane, and termed *cuerno;* and the squid. All of these fish are eaten by the Minorcans, especially by the poor. The oyster is of medium size and found encrusting the rocks: it is slightly copperish, and more tough than that of the United States. The clams afford an excellent soup, and are abundant; the craw fish, well dressed, is almost equal in flavour to the lobster; and as for snails and date fish, the former is the food of the indigent, the latter that of the wealthy. The snails are found in vast numbers, adhering to grass, weeds, bushes, and stones, and clambering up the walls. The date fish* holds so prominent a part, is so very highly prized by all who have eaten it, and has something so singular in its habits and mode of existence, that I may perhaps interest some of my readers by speaking of it in full. This fish takes its name from its colour and shape resembling, in one and the other, a ripe date. It inhabits the limestone rocks, bordering on and submerged beneath the sea, and the waters of the coves, bays, and harbours of the island, particularly that of Mahon, where the rocks of every size from the smallest to the largest are found having their superficies, and sometimes nearly their whole substance, honeycombed by this animal. Persons who have not examined into its history, and have merely seen it when full grown, are apt to believe that it grows externally to the rock, or that this has been encrusted about it from time immemorial; but this is altogether an error, as may be ascertained by any one who will take the trouble. The date fish when full grown is usually from two and a half to three inches long. It is bivalve, obtuse at one end, sharp and flattened at the other, has a dark brown membranous head, formed for sucking, a small body with four prominences on the belly, and a hooked, spear-pointed process, like a tail or proboscis. The body rests between two, soft, thick membranes, having their edges tinged with brown, and no doubt constituting its branchiæ or respiratory apparatus. At the back of the animal, close to the hinge, is a thick, white, and strong ligament; and when in the rock it has several very small, bristle-like, and radiated bands, by which it binds itself anteriorly to its cell, from between its two valves. The precise attachment of these bands to the fish cannot be ascertained from their being always ruptured in breaking the stone and forcing open the shell, but it is probable they proceed from the process mentioned, as they radiate exactly from towards that part. The cell† of the date corresponds with it in shape, not in size; being considerably larger, is smooth, accurately made, runs inwards, obliquely or directly, and communicates with the air by an orifice about a half inch in length, a quarter in breadth, and compressed on the sides, so as to form with the margin the figure of eight.‡ Some of the cells have holes of communication in their parietes—

* See Plate III., fig. 1.
† See Plate III., fig. 2, 2.
‡ See Plate III., fig. 3, 3.

probably caused by the dates lying too close together; and occasionally their orifices are in apposition or united—two forming one. In what manner these cells are formed is not positively understood, though there are strong reasons for believing that they are made by the secretion of an acid decomposing the stone, which is a carbonate of lime, and not by attrition, or any other mechanical operation. In the first place the fish has no teeth, claws, or any other means of destroying the stone, save its valves, which however are too thin and weak to work in so hard a substance. Secondly, it is not possible for the animal to turn itself about and mould the cavity to its own form. Thirdly, this operation of excavation is begun at too early a period for us to suppose that the date could execute such a task; and fourthly, no fragments of the rock, such as are found in substances gnawed and destroyed by worms and other animals are to be met with in the cells. It is true that this limestone is often sandy and soft, but the largest and hardest rocks of it I have seen, had been thickly inhabited by dates; and I now have a specimen of the crystallized kind as hard as marble.

What is the nature of the acid formed I have not been able to discover, but it seems to be one secreted by the animal itself, and which not only serves to form the cell, but likewise to soften or decompose the stone for partly nourishing the animal.

The opinion that this fish has been imbedded in the rock hardly deserves comment, for it is disproved by the date being only found near the surface; by its being never seen in that part of the rock which rests upon the bottom; by the cells being larger than the dates; by their always having a direct communication with the air and water through the orifices mentioned; and invariably having the sharp and flattened end of the shell, which is that next to the head, presenting itself immediately to the orifice, thereby showing that mere chance could not have arranged the fish with so much regularity, and after only one mode.

In the sides of the cells it is common to find small holes formed by a very long, slender worm, with countless feet, a flat belly, a black head, and of a brown color. This worm appears to inhabit a coralline shell, encrusting the inside of the cells, and of serpentine shape, and to subsist by preying upon the dates, whose empty shells are sometimes found filled with worms of the same species, and a gelatinous substance, forming a nidus for them.

Covering the rocks, and filling its crevices, are found oysters, crabs, barnacles; a soft shell, containing an animal of a reddish color; another kind, called in Minorcan *upa de cabrit*, or goat's nails; a third sort, resembling the first, and termed *pichones;* and several species of small gelatinous zoophytes, which are probably the food of both these shell fish and of the dates. Within the same rock as these occupy, and mingled with them, is another shell fish,* which inhabits a cell also, of similar construction to the other, and appears to be a variety of the date; but it is much smaller, of a

* See Plate III., fig. 4, 4,

white or grey colour, shaped like a short, broad, flattened almond; and has upon its body two conical, hollow, processes, placed one before the other, and with their bases very close together. Both of these cones are undoubtedly concerned in the nutrition of the animal.

At first I supposed, from having found an empty shell of this fish in one of the dates, that the latter had first the almond shape, and was transformed into that of the date after having attained a certain age, but since then I have met with both fish of every age and size, and obtained the date of a white color, and as small as a grain of barley; to which it had a strong resemblance. I therefore no longer entertain this supposition, and am inclined to believe, from both fish being inhabitants of the same rock; from the peculiar form of the bodies, there being frequently a number of small date fish round the almond shaped; that the latter are the females. In what mode procreation occurs is doubtful; but it is certain that, if these animals are not hermaphrodites, sexual intercourse takes place through the apertures, and that the young being produced, leave the cells of their parents, and adhering to the stones, commence the work of excavation. In what state the young at first exist I could not ascertain satisfactorily, but I think, from having found a small worm, of still smaller dimensions than the most diminutive date, buried in a similar cell on the surface of the stone, that the first state of the animal is that of a naked worm, and that it makes its primitive impression on the stone, either by gnawing, or by secreting and applying the peculiar acid before mentioned. The last is probably the most correct opinion.

Having brought this long account to a close, I will proceed to consider the class of

Zoophytes or Radiated Animals.—These are no less numerous than the preceding, both in species and numbers. I shall not enter into a minute detail of them, but simply speak of some of the most remarkable; and first, of the *naranja*, a *polypus* which takes its name from its being in form and size like an orange, but not from its color, which is almost black. It is a simple sack, filled with water, and a great number of transparent silk-like bands passing from side to side, and forming a reticular structure. It is incapable of motion, and is found lying at the bottom of the water near the shores, apparently inanimate, but when cut it contracts and turns the lips of the wound inwards. Next to the *naranja* I will speak of the *limon pina*,* and the *morana mansa*, or *holothuria tremula* of Cuvier.† The first is a *polypus*, and takes its name from its resemblance to a lemon, having a similar shape and color. This zoophyte has a brown, rough stem or base, by which it adheres to the rocks and other hard substances. When full grown it is about the size of the fruit whose name it bears, contains numerous cells communicating with two orifices, situated in two conical nipple-like processes; one of which is at its upper end, the other about an inch below. It is probable that through the upper orifice nourishment is received, and through the

* These are the Minorcan names. † See Plate IV., figs. 1, 2, 3.

lower, excrement is discharged. The colour is yellowish at the base, and reddish at the apex.

The *pinda* is also a polypus, and is so named from its resembling a pine apple, or the cone of a pine tree. It is of an oval shape, covered with knots, of a slightly greenish-yellow colour, three or four inches long, semitransparent, gelatinous, elastic, contains many small and large cells opening into two orifices—one of which is at its apex, the other near its middle—and adheres by its base to shells, stones, old bottles, and other things thrown into the water. The two orifices appear to answer the same purposes as those belonging to the *limon*, and without any doubt are concerned in nutrition. Immense quantities of this zoophyte are found; but the only use made of it is by the fishermen, who esteem it very highly as a bait, and cut it into small pieces for that purpose.

The *holothuria tremula*, is like a slender cucumber.* It is of a cylindrical shape, tapers a little at each end, is covered with conical knots on the back and sides, is of a blackish-brown colour, except on the belly, that being white, and consists of a coriacious sack, filled with a single intestine, which terminates in two orifices, and contains nothing but water and sand. This zoophyte, varies from six to twelve inches in length, from three to four inches in circumference, and appears perfectly incapable of motion, lying seemingly dead at the bottom of the water, near the land. When taken ashore and exposed to the air, or struck, it quickly ejects its entrails from the mouth, and expires.

Besides the above, the only zoophytes I shall mention are the *medusas*, or sea-nettles; the *asterias* or star-fish; the *echini*, sea urchins, or eggs; and the *actiniæ*, or sea-anemones, which alone merit particular notice, the others being such as are met with in most places. Of the anemones there are two genera, each of which has two species. One species of the first genus consists of a simple membranous sack, from the mouth of which radiates numerous tentacula of several inches in length, of a black colour, and looking like the spines of a sea egg. The other species resembles the first, except in colour, that being orange, with purplish spots, disposed in circles one within the other. The vulgar name for them is *votiga-verda*.

Both species of the second genus are called by the natives *rosas*, or roses, from their being like those flowers; having a corolla, usually consisting in appearance of from five to ten petals, but really having only one with several indentations, causing the deception. They are commonly of delicate yellowish-white or buff colour, sometimes alternately white and yellow, and having the streaks radiating from the mouth of the sack, each streak covering a petal. Around the mouth is a ring of dark brown and short tentacula, proceeding from the inside of the sack, and resembling the stamina of a flower, disposed in that manner, and growing from the inside of the petals.

The *rosas*, especially the first species, are found in great numbers

* Hence the name of sea-cucumber is given it by some persons. See Plate III. fig. 4.

in shoal water near the eastern shore of the harbour, but not at all times, for when the weather is cloudy, or stormy, or cold, or very hot, and when the sun is very brilliant and powerful, as about midday, they are not to be seen at all, or, if they are, in small numbers. From searching for them at the wrong time I have failed in finding any. The best time of the day for seeing them I ascertained finally was in the afternoon from four to six o'clock, and then in searching for them it was necessary to avoid agitating the water, and touching them with any thing whatever. For, by neglecting those precautions I have caused them instantly to retract their flowers, and hide themselves beneath the sand; when taken out from this they appear to be nothing more than thin, flabby, greyish membranous, conical, and lifeless sacks.

The last of the animal kingdom which I shall notice is the *sabella*, which belongs to the order of *annulata*, but examined carelessly might be taken for a zoophyte. This most singular animal is called the *clavel** by the Minorcans, the sea-pink by the English and Americans, and the *pinceau de mer*, or sea pencil, or brush, by the French. It inhabits a membranous tube, usually nine or ten inches long, but sometimes as much as eighteen inches, and about two-thirds of an inch round, of a greyish colour, open at one end and closed at the other. Through the open end the animal protrudes, and by the other is agglutinated and fastened in a serpentine manner to the stones, shells, and other things to which it adheres. At the former end it is perfectly round; at the latter is flattened.

The animal itself consists of a body and of a flower, the latter being its head in appearance, but really its branchiæ. This flower is a spiral plume, with three turns when it is protruded and expanded, but when retracted and folded is a plume having all its feathers, as they may be called, parallel to one another. The feathers are attached to a twisted, flattened axis. They vary in length from one to two or three inches, being shortest at the apex of the spire, and are formed in an inconceivably delicate manner, each feather being made of many extremely minute ones, so that the closest inspection is required to perceive them; and to see that these minute, are inserted only on one side of the large feathers. When folded the plume is spotted something like a leopard skin; expanded, it presents a beautiful display of orange, white, and purple spots, arranged in circles one within the other. The number of circles, according to what I have observed in many clavels, is nine, four of white and five of purple; with nine more of orange intervening, and making eighteen altogether. The white are placed together next to the axis, the purple being external and next to the circumference of the spire. Every feather is coloured in the same manner, having the same colours and the same number of spots, so that each turn of the spire has the same number of circles.

The body resembles that of a leech; but it is rounder and longer. It

* See Plate V., fig. 1, 2, 3.

is of a brown colour upon the back, of rather a leaden hue on the belly, and is commonly from six to eight inches in length, accordingly as it is extended or contracted. Its length and size, however, are always in proportion to those of the tube. Its back is marked by transverse ridges terminating in points upon the sides. Behind these points are small orifices forming what I take to be secreting glands. By means of the points it is enabled to glide out of or into the tube, which it does in such a fashion that the tail is the last to leave and the first to enter.

The belly is smooth, glossy, slightly wrinkled, or marked with transverse ridges, corresponding with those of the back, and contains a single intestine which extends the whole length of the animal, and is filled with dark fæces, partly fluid, partly solid. This curious animal has neither eyes nor mouth which I could detect, though from my being able to push a pin with ease into the belly, from the root or end of the axis, it is possible a mouth may exist there. In what manner it obtains its food is somewhat dubious, but if no mouth exists it must be by absorption through its plume; and if there is a mouth, then it must be obtained by first collecting it upon the plume, and afterwards transferring it to the mouth. Taken out of the water and exposed to the air, the clavel soon leaves its habitation; its plume becomes folded, its beautiful colours quickly fade, and death ensues.

The mode in which the tube is made could not be determined; but it is, I think, by the secretion and subsequent condensation of a gelatinous substance from the surface of the body, or of the glands mentioned. The growth of the tube goes on in length and circumference in a ratio to the size of the animal.

I could not ascertain the manner in which generation is carried on, although every means was taken to effect that object; and I was never able to obtain a clavel less than three inches in length, notwithstanding I searched at every season of the year, and employed others to do the same. Inasmuch, then, as I have no facts to advance on this subject, and all that I could say would be theoretical, I will leave it to some more accurate observer for elucidation.

Agriculture.—Although the peninsula itself has been afflicted by both foreign and civil wars, Minorca has continued to enjoy tranquillity ever since the last invasion of the English in 1798; and the islanders have had both time and opportunity for the cultivation and improvement of the soil. Hemp, flax, wheat, barley, Indian corn, and the vine, are the chief objects of the farmer's care; and his industry is fully rewarded by abundant crops. Indian corn and barley are raised in comparatively small quantities; but wheat, I understood, has been of late years so plentiful, that there has been not only enough for home consumption but a good deal for exportation, to supply the deficiency caused on the peninsula by the civil war. During the last year, the crops were particularly abundant, so much so, that difficulty was experienced in procuring

labourers to gather them. The wages of these persons were vastly increased, as much as fifty cents a-day having been paid for a male adult; a price considered very exorbitant, and really such when we compare it with the wages paid labourers ordinarily.

Agriculture, however, is still susceptible of improvements. The plough is still, as in the days of Cleghorn of the most simple construction, being nothing more than what we call a shovel plough, and light enough to be drawn by a single ox or mule, one or other of which is commonly used.* As a matter of course the ploughing is superficial and imperfect. Manuring is attended to; but plaster of Paris and clover are not used as in this country for enriching the soil; and it would be surprising how it is made to yield so much as it does if it were not for the plentifulness of lime and the excellence of the climate.

Hemp and flax are raised in large quantities; enough of the former being made to furnish the island, and to supply cordage to foreign vessels. The vine is cultivated in two ways; that about the houses and in the yards is moderately pruned, and permitted to throw its branches over frames for forming arbours, while that in the gardens and lots on the contrary is closely pruned, and merely has its branches supported by cane props.

In gardening, great use is made of irrigation. Water is obtained either from the springs and rivulets, or from wells, and is distributed by aqueducts made of hollowed blocks of limestone placed in apposition and cemented together. Well water is procured by the Persian wheel. This consists of a horizontal wheel turned by a vertical one, and of a circular chain of earthern jars fastened to ropes and twisted rushes, by cords of a tough grass. The horizontal wheel is on a level with the upper part of the vertical one, and is turned by a mule hitched to a pole connected with the axis of the wheel. The vertical wheel having cogs on one side is revolved by the spokes of the other one, and the jars descending in rotation draw up the water which is emptied out of them into a trough, from which it flows into a reservoir near the well, and thence, after it is sufficiently warm, it is allowed to descend upon the plants. To enable the hill sides as well as the valley to derive benefit from the irrigation, it is common to have the water drawn considerably elevated, by the erection of a wall about the well, and a platform on the top of this for the wheel and mule. By this means the water is sometimes raised fifteen or twenty feet higher, and is made to reach parts which otherwise would be left dry. Nothing can be more useful, and yet nothing more simple in construction than this machine. Except the iron pins on which the axle of the vertical wheel revolves, there is nothing about it which the farmer cannot make himself, and obtain upon his own grounds. The stone for the gutters and cistern, the clay for the jars, the wood for the wheels, and the rushes for the ropes, can be all procured without expense; and in forming the machinery hardly any other tool than an axe is required.

* These are the only animals commonly used for agricultural purposes.

Diseases.—These are by no means numerous; and Minorca may be considered with some exceptions as singularly free from the complaints most destructive of human life. None of the *exanthemata* are common; measles and scarlet fever are rare; small-pox and varioloid occasionally prevail, but they appear to be owing to importation rather than to the existence of the virus among the inhabitants. A strong proof of both these propositions is found in the fact, that I have never known any of our ships of war to get either disease in Minorca, although they are there more than in any part of the Mediterranean: they usually contract these diseases elsewhere and ride out the quarantine at Port Mahon, where the best accommodations for the sick are to be had.

Plague has been occasionally introduced, but as far as I could learn has never been epidemic; it having been confined to Port Mahon, and having originated from vessels which came from the Levant. The last time it appeared it is said to have broken out in a family at Villa Carlos, who were infected by a chest of smuggled clothes. Pulmonic affections of every kind exist, and among them consumption holds a conspicuous place; but they are neither so frequent nor so violent as those of colder regions. Though during the winter and spring the coldness, dampness, and violent winds may often give rise to these complaints, I would nevertheless as soon recommend a consumptive patient to reside in Minorca as in any other part of the Mediterranean of a corresponding latitude; and I would much prefer this island to the north of Spain and Italy, or to the south of France, where he would be exposed to the chilling blasts of the Alps, Pyrennees, and other mountains.

Dysenteric and other disorders of the alimentary canal prevail, but I am not aware that the former does so to such a degree as to be called epidemic; and in this respect the climate seems to have undergone a material change since Cleghorn lived in Minorca. It is true, the crews of the ships to which I belonged while they were there suffered from diarrhœa, dysentery, and cholera morbus, but this I attributed rather to excesses in eating fruits and vegetables, and to the drinking of certain waters, than to any defect in the climate. These affections I have always found prevalent, as before mentioned where such excesses were committed, and especially when the crew had been long at sea, and living on salt provisions, with little or no admixture of vegetable matter. Soldiers being addicted to these excesses quite as much as sailors, I am inclined to believe that the dysenteries mentioned by Cleghorn, were rather epidemic among the soldiers than among the islanders.

Asiatic cholera, after having pervaded nearly all Europe, at length appeared in this island in the fall of 1834, and having committed considerable ravages among the poorest and most dissolute of the population it disappeared, and has not since been seen. It is believed by many to have originated from an infected vessel, which arrived at Port Mahon from Sardinia, but facts are wanted to substantiate this

belief, and it appears to have been produced here as in other countries by some unknown constitution of the atmosphere.

Hepatitis and *splenitis* may be very correctly classed among the diseases of Minorca, its climate being so warm, and miasmata abounding. *Ophthalmia, scrofula,* and *rheumatism,* are likewise met with, but cannot be reckoned among the complaints to which the inhabitants are most liable. It is stated that they are peculiarly subject to *hernia,* but from my observation this is principally among the labouring class, and especially among the caulkers, who, from the bent posture they assume, and have constantly to keep while working, are generally ruptured. Venereal diseases of every species are found, but by much the most numerous is gonorrhœa. Genuine syphilis is decidedly uncommon, at least such was the case in the ships mentioned, the John Adams and United States. Chancres and buboes are often seen, but they are usually of a doubtful character, and hardly ever followed by secondary symptoms. What would have been the result if left to themselves, of course, is uncertain.

In speaking of exanthematous affections, I might have stated that the domestic red wine is thought to produce a peculiar nettle rash, attended with itching and burning. This I believe to be true, but this eruption appears chiefly to occur in strangers who have been drinking the wine to excess; although I have heard persons who had used it temperately observe, that they could not drink it without their suffering in this way.

The diseases which may be with most propriety considered prevalent in Minorca are fevers; and yet there are only two which are very often met with; viz., the remittent and intermittent fevers. Typhus is almost unknown, and yellow fever has only occurred now and then at the lazaretto by the arrival in quarantine of infected vessels, and that it has been confined exclusively to the guards and other persons employed about the establishment. Among the former, as I was informed by one who was employed there at the time, forty deaths occurred when the disease some years ago was introduced by an infected vessel which arrived from Havana, and was sent to Port Mahon to be quarantined.

Remittent, and particularly intermittent fevers, may be called endemical in Minorca. During the summer and fall they both prevail, but the latter is by far the most generally: and to such an extent does it affect the inhabitants, that I was told by an individual of veracity, and one well acquainted throughout the island, that he did not believe there were ten of the inhabitants who had attained the age of forty and had not been affected with this disease.

The most unhealthy parts, those where the intermittent fever abounds, are the borders of the inlets and harbours, of the ponds and rivulets, and the valleys with their adjacent eminences. The principal of these unhealthy parts are the Albuferas, or lagunes of salt water, four miles to the north of Mahon; the ports of Fornells and Mahon; the two valleys or ravines running to the north-east and north-west from the head of the latter harbour; and the country about Mercadal,

near which are a rivulet and a pond or lagune. The most complete hot-bed of the disease, I think, is the former ravine; which is formed on one side by hills and on the other by a continuation of the lofty precipices on the west side of the harbour. This ravine winds around the town for a mile or more, and being well cultivated, producing a most luxuriant growth of vegetables, and being kept in a constant state of moisture by a stream of water passing through it, and the irrigation from the wells in the gardens, must necessarily be a most fruitful source of miasmata, as is satisfactorily proved by the inhabitants of the suburbs of Mahon which overlook and adjoin the ravine being generally afflicted with intermittent fevers. The stagnation of the stream mentioned, and the exuberant growth of aquatic plants upon its banks and surface, indicate it to be one of the most efficient causes of the insalubrity of the ravine; but it is thought that this is owing in a great measure to the large quantities of hemp raised, and which after being cut is placed in the stream and at the head of the harbour for rotting. How far correct this opinion may be is problematical. We, however, can very reasonably allow that hemp in a state of decomposition may be as productive of miasmata as any other vegetable substance in a like condition.

That part of Mahon overlooking the head of the harbour, and next to the Franciscan convent, is likewise very unhealthy, being directly exposed to the miasmata proceeding down the north-east ravine and from the head of the harbour, where the two ravines unite, and the stream disembogues. The wind blowing so constantly from the points between north-west and north-east, these ravines serve as directors to whatever exhalations arise from them; and the inhabitants, as long as the winds continue, must of course be exposed to an uninterrupted current of pestiferous effluvia. During the last autumn the people of this quarter of the town suffered very much, and I have been informed that when the latter was in possession of the English, and their squadrons made it a place of rendezvous, some of the ships having anchored at the head of the harbour between it and the arsenal, had their crews so much afflicted with tertian, that they were obliged to remove below the town towards the mouth of the harbour, or below the point which is on the western side of the cove of Calafiguera.

To miasmata we ought certainly to ascribe the great prevalence of intermittents among the Minorcans; but we cannot properly overlook other causes, and, above all, the scanty food of the lower classes, who live almost entirely upon fruits and vegetables, and even have a limited allowance of them. A loaf of bread, a bottle of domestic red wine, a few cloves of garlick, a dish of snails, and a porridge of pumpkins, celery, lettuce, beans, and other vegetables, seasoned with a small piece of meat; or a mess of boiled rice, seasoned with a little curry and a *sobreasado* sausage, form as good a diet as many can get who consider themselves in comfortable circumstances, and who are really so when they are com-

pared with many other persons. In what manner the poorer class live may be imagined, when I mention that one of them informed me that his family, consisting of a wife, a child or two, and several relations, cost him only twenty-five cents per day; and what is the quality and quantity of food consumed by an individual may be calculated from the fact, that a seamstress may be hired for a real,* ten cents, or half *peseta* a day, and that she will, nevertheless, go home to take her meals. Besides the things spoken of above, a favourite article of food is cabbage, first boiled and afterwards fried with lard. This dish is liked by both rich and poor, and is taken for supper just before going to bed. A person of large property informed me that his wife was so fond of it that she eat it every night at ten o'clock, and preferred it to any delicacy which could be given her. Prepared in the manner stated, cabbage is thought not only a savory, but a very wholesome article of food. Such may be the case with the Minorcans, who have become habituated to its use, but it seems to me that by most Americans it would be found rather indigestible, at least a bar to sound sleep, and a course of night mare and distressing dreams.

In the treatment of intermittent fever, the sulphate of quinine is principally employed, and is administered nearly altogether in pills; but in cases where the stomach is disordered, its use is commonly preceded by an emetico-cathartic of a grain of tart. emetic and a half ounce of the super tartrate of potash.

I might go on to speak of the treatment of other diseases, but to avoid prolixity I will stop here, and merely remark that the Minorcan physicians, being well educated, treat them with skill; and in their practice adopt the ancient connected with the modern method. The most distinguished of them having been educated in Paris chiefly follow the French practice. Physicians of less eminence are educated at Barcelona and other places in Spain, and differ in their practice accordingly.

A great portion of the medicines used are imported from Marseilles, and are vended by no other than regularly educated apothecaries, all of whom are required to have the degrees of licentiate, bachelor, and doctor, and to have gone through four years of study and four of practice. Their diplomas come from the royal superior governing junta of Madrid. In the sale of medicines their prices are regulated by government, and each apothecary is provided with a table in which all of these are laid down. The last table was issued by Ferdinand VII., in 1831, and still serves for the purpose designed. The apothecaries, then, being so well qualified for their business, and restrained by law, the people are both well and cheaply served with all the medicines and other things required. They also enjoy, owing to the prohibition of the sale of nostrums, panaceas, and other articles of this nature, remarkable exemption from the impositions practised in those countries where the law exercises no restraint over the apothecary, and he is permitted to deal out at any price whatever drugs he thinks fit to prepare himself, or to sell for the charlatans by whom he is employed.

* The Minorcan real is double in value to the Spanish.

MAHON, AND ITS VICINITY.

This being the capital, and the only town of importance in the island, is entitled particularly to our notice. Omitting, then, to take notice of other places, I shall proceed to make some remarks of a general kind concerning it, and then to speak at large on subjects of a professional character.

Mahon, as is known to the readers of history, was founded by the Carthaginian General Mago, the brother of Hannibal, about 200 years before the Christian era, and hence it was called by the ancients, Portus Magonis, from which by corruption it is now commonly termed Port Mahon. It is situated on the western side of the harbour, between the ravine spoken of and the cove, Cala Figuera. In front, for its whole length, it has a precipice of about 100 feet high, and down this oblique streets have been made to communicate with the harbour and that portion of the town built along the water's edge, and upon the quay at the foot of the precipice.

The town is laid off into streets, mostly crossing each other at right angles, and on an average about 30 feet in width. Some are considerably wider, and others much narrower than this; and all are paved with pebbles. The houses are built generally after the English style —opening directly into the streets, having yards behind, and no courts in the centre, as is the fashion in Spain. Their roofs are, with a few exceptions, sharp topped, and covered with brick tiles; their floors are of the same material, and their walls altogether of the soft limestone before-mentioned. Exteriorly and interiorly they are either whitewashed or painted yellow, blue, or of some other colour. Some of the finest private buildings have flat roofs and towers on top, and have floors of glazed and painted tiles. Ordinarily they are furnished with the oldest fashioned and plainest furniture; but even the smallest of them, and those belonging to the poorest inhabitants, are strikingly clean, even the outer steps being nicely whitewashed. None of the public edifices are remarkable for beauty, though some of them, as the deserted Convents of Carmen and St. Francisco, are very extensive, and built in the most substantial manner. The Cathedral is a plain, large Gothic structure, but has nothing about it particularly remarkable, except its organ, which for size, beauty, and the excellence of its music, is considered one of the finest in Europe.

There are two charitable institutions, the *Casa de Caridad*, or House of Charity; and the *Casa de Espositos*, or Foundling Hospital. The former edifice is near the western end of the town, on one of the principal streets. It is an ancient building, two stories high, is made of stone, has a court, with a corridor to each story, and is about 100 feet square. In the first story are the office of the superintendent, who is a friar; and the baths, which are of white marble, and placed in recesses formed by partitions made within a large apartment. These baths are for the use of the

patients, and also for the benefit of such citizens as desire to occupy them. The latter are charged a reasonable price for bathing. The second story is divided into several small and large wards, neither as cleanly nor as well ventilated as desirable. Not more than a hundred patients could be well accommodated. This institution is supported at the public charge, and is designed for the citizens alone, but of late has been used as a Hospital by French seamen, who can not be conveniently attended aboard, and to whom a residence ashore is desirable.

The *Casa de Espositos* is in the same quarter of the town as the *Casa de Caridad*, and is of nearly the same dimensions, but is differently arranged, having been once a private residence. It is three stories high, has a small court, and a great many small rooms. When I visited it, it contained one hundred and nineteen foundlings; fifty-three boys, and sixty-six girls. The former were below engaged in carding wool, the latter above employed in spinning yarn, weaving lace, and embroidering black laced veils, a favourite occupation of the Mahon ladies. For a certain portion of the day the children are employed in school, where they are taught the elementary branches of literature. Besides these there are three hundred out-door foundlings under the care of nurses, who are paid for suckling and taking care of each one, sixteen Minorcan reals, or one dollar and sixty cents, per month. The whole cost of the institution is four hundred dollars a month, and the sum is paid from the public revenue and from the income arising from donations and legacies made by different individuals; among whom was a young man named Ganallons, a native of the island and a midshipman in the English navy, who left his estate to this institution. In gratitude to him, his portrait was taken in 1778. It represents him in uniform, and now, with that of his brother and uncle, the latter of whom was the bishop of Catalonia, and who received that appointment in 1669, and died in 1708, aged sixty-seven years, decorates one of the apartments occupied by the females.

The foundlings leave the house at various ages, according to the demands for them from without. The females have the privilege of remaining until they are twenty-five years old, and when they marry receive a dowry of one hundred dollars. The foundlings who become seriously sick are sent for treatment to the *Casa de Caridad*. When any person is desirous of leaving a foundling he goes by night to a window upon the street, kept closed by a shutter, and marked *torno de espositos* or *foundling wheel*. The shutter having been struck, it is opened from within by an attendant, and the child having been deposited in the outer compartment of the wheel, which is fixed within the window, is rotated into its future habitation and consigned to a nurse.

Besides these hospitals there is another, formerly the Naval, but of late years, having been used both by seamen and soldiers, has acquired the name of the Military Hospital. It stands upon the island of Rey, which is in the centre of the harbour, and a half mile below the town. This island, according to the tradition of the

country, was called Rey, from Don Alonzo the Third, King of Arragon, having disembarked upon it in 1287, when he came to conquer Minorca. It is from half a mile to a mile in circumference, from forty to fifty feet in height, and composed almost entirely of rock disposed in strata, and, as stated, corresponding with those of the western side of the harbour. Being immediately in the centre of the harbour, a mile from its entrance, the same from its head, and half way between the opposite shores; moreover, being precisely between the two best anchorages, this island affords as fine a site for a marine hospital as could be desired, and accordingly was chosen for such at a remote period. The first hospital must have been erected a considerable time before the last century, as Sir John Jennings, who commanded the English fleet in the Mediterranean in 1711, pulled it down and erected another in its place, which is said to have cost 3600*l.* sterling. In 1773 a third one was begun, and finished in 1776, at an expense of 520,000 reals, or 52,000 dollars. Since that period it appears to have been again rebuilt, or materially repaired, as Sir William Burnett, the present surgeon-general, has the credit of having had it made as it now stands. This hospital is constructed of stone; is two stories high, three hundred feet long, sixty feet wide, has two wings extending backward one hundred feet, and about forty feet in width, and a corridor to each story, extending from the end of one wing along the back of the main building to the end of the other wing. These corridors have arches which rests upon square columns.

The roof and floors are of brick tiles, and made after the ordinary mode. On the summit of the former, and in the middle of the main building, is a handsome cupola, and at the end of each wing an iron balcony communicating by a door with the second story. The whole edifice is divided into rooms and wards of convenient size, and having their doors and windows chiefly looking into the corridors, by means of which all the apartments communicate with one another. Five hundred patients might be conveniently accommodated in them, but not as many as might have been had they been made larger, and not so much space had been lost by the numerous partitions.

In front of the hospital is a spacious kitchen, which although convenient is out of place, and spoils the appearance of the edifice from the west, by obstructing the view, hiding the entrance, and occupying the ground which should have been appropriated to a portico.

Between the wings in the court are three covered wells, or cisterns; and a little farther back, in a line with the wings, two buildings designed for the medical and other officers of the establishment. At the back of these buildings is a store house, one story high, and extending almost the whole length of the island on that side.

This hospital, after remaining many years unoccupied, and being seriously injured by neglect, has been let to the French, who make use of it as a depository for ship stores, and the coal brought to

Minorca for the steamers plying from France to Algiers; but who do not occupy it at all as a hospital; so that it is really a great shame that a building so admirably suited from its location and structure for invalids of every kind, should be appropriated to a purpose altogether different from that for which it was designed. It would have been much better for it to have been rented by the United States, and used as a hospital for our seamen, who when sick have generally been obliged to pine away in the illy-ventilated quarters of our men-of-war, until death has ended their sufferings, or the vessels have returned home.

LAZARETTO.

This establishment is by far the most extensive and important of the kind belonging to Spain; and is not excelled by any in the Mediterranean. It is an object of admiration to all strangers, more worthy of attention than any thing I saw in the Island; and may be justly called an honour to the nation to which it belongs. To describe it will be the least eulogy which such a monument of humanity and civilization deserves.

This Lazaretto* was founded in the year 1794, and designed by a captain of engineers, Don Francisco Fernandez de Angulo, who did not live to see the work completed. He was succeeded by Don Pauli, another engineer, who, proving a defaulter to government, was removed. The construction was then undertaken by Don Manuel Pueyo, a lieutenant-colonel of engineers, but the English having gained possession of the island in 1798, it was discontinued; and the place occupied as a barracks by the soldiers, until June 1802, when the island was given up to the Spaniards. The construction was then renewed, and continued under the direction of Don Juan Jose de Cusans, also a licutenant-colonel of engineers, until it attained its present condition, which is incomplete, and falls short of the original design; I suppose in consequence of pecuniary embarrassments and the internal disorders of Spain.

This establishment is situated on a rocky peninsula, and between a deep, narrow cove, called pest harbour, or Cala Taulera, and the eastern side of the entrance of the harbour of Mahon. To the south-east of the peninsula and Cala Taulera, is the Mola, a lofty precipitous promontory; and to the south-east, on the other side of the entrance of the harbour are Georgetown, or Vila Carlos, and Fort St. Philip, which is mostly in ruins, having been blown up when the English last retired from the island, the Spaniards looking upon it as too convenient and dangerous a stronghold for an enemy.

The lazaretto covers almost the whole peninsula, being 480 yards in length, and 265 yards in breadth, but from the irregularity of the latter is not symmetrical, and of no decided shape. As nearly as I can calculate, it occupies twenty-five acres of ground, and its

* See Plate VI.

highest part is fifty feet above the level of the sea. The whole establishment except the *corral*, or place for cattle and other animals in quarantine, is surrounded by a double wall, varying in height a little, but averaging about twenty-five feet. These walls, as well as those of all the buildings embraced within them are constructed of limestone, procured from the peninsula and quarries of St. Philip. The walls are sharp at top, wide at the bottom, formed of cuboidal blocks cemented together, and are from fifteen to seventeen yards apart, leaving an avenue between them, which contains the porters' lodges, and is divided into several sections by partition walls. There are four principal gates; one on the northern, a second on the southern, a third on the eastern, and a fourth in the western side of the outer walls. The ground enclosed by these is divided into seven distinct quarters, furnished also with walls of equal height to the outer ones, with the exception of one—the *corral*, whose walls are lower on three sides, from its not being necessary to have them as high to confine quadrupeds as bipeds.

One quarter is used exclusively for a cemetery; another is the *corral;* the third and fourth are occupied by the *almacenes*, or store houses; and the three quarters remaining contain the infirmaries, observatory, chapel, oratories, the residence of the alcayde, the houses for passengers, and the gardens. These three quarters are variously subdivided. The first one has three triangular divisions, in each of which is an infirmary; the second one four quadrilateral lots, separated by four wide avenues, and containing the alcayde's residence, two houses for passengers, an infirmary, and an oratory; and the third quarter consists of a house for passengers, one infirmary and one oratory, and several smaller buildings, enclosed within three lots of an equal size. One of these three lots is cultivated as a garden, and has within it only two small buildings, but was intended to contain the houses of all persons belonging to the lazaretto, having a clean patent; that is, those of the alcayde, servants, workmen, and others. These buildings not having been erected, the alcayde occupies a house designed for passengers in quarantine.

The observatory stands at the junction of the four avenues just mentioned. It has a yard formed by walls cutting off a part of each avenue; and is a handsome building resting upon an arch supported by four columns, and having a cistern beneath. Above is a lofty tower rising from its terraced roof, which from its summit commands a fine prospect of the sea, harbours, and island. The *almacenes* are eleven in number; three are contained within one enclosure and eight within another; seven of them are large, and four small. The former stand near the centre, the latter upon the sides of the enclosures. All are of stone, and covered with fluted brick tiles. The largest are formed of arches, closed by Venetian blinds to permit ventilation; and from one to two stories high, about 50 feet wide, and 150 feet long. Between these buildings are rows of stone benches for spreading out and airing their contents when occasion requires.

The infirmaries are five in number; but the two last spoken of, being divided into four parts by walls which have been raised across both their front and back yards, so as to cut off communication between their ends, may be said to be seven. All of them are one story high, and are in separate lots. They have receding porticos in front, are covered with tile, and paved with brick, and have their windows secured by grates. They are divided into rooms of comfortable size, partly supplied with fire places, and communicating through the porticos alone. The kitchens are small buildings, standing either in front of or behind the infirmaries, and within the same enclosures. The four last named infirmaries are situated near the oratories, which, having doors opening into the yards of the former, the sick who are well enough can enter the latter and attend divine worship. The oratories are between these infirmaries, and at the distance of from one hundred and fifty to two hundred feet apart. They are two in number. They are semicircular; have their convexities towards the infirmaries, their concavities fronting each other; are one story high; built of the same materials as the other edifices; and are divided into a number of rooms lighted by iron grated windows, which look towards the chapel. This latter is situated precisely in the centre of the space between the two oratories, and is a small round edifice, surrounded by steps, having a dome surmounted by a cross, and walls so completely occupied by windows, that whatever is done at the altar may be seen by those in the oratories, or in the avenues running towards the chapel, or in the garden which encircles this building.

Including the alcayd's residence there are four houses for passengers; each one of which is in a distinct lot, and has around it a wall of the usual height. All of them are two stories high. Three of them are forty feet wide, one hundred and twenty feet long, and divided into chambers, parlours, and kitchens. There are two chambers to each parlour, and communicating with it; and every parlour has a fire-place. The kitchens are all in the first story, and are constructed for burning charcoal alone. In order to keep their occupants distinct, half of the rooms open into one yard, and half into the other, and those on one side of the house do not communicate with those of the other side. To render non-communication more complete the yards are separated by walls, built at the ends of the houses, between these and the walls enclosing the lots.

The fourth house for passengers is a handsome edifice, situated in a lot of corresponding dimensions, and containing nearly three acres. This edifice* is two hundred and twenty-five feet long, fifty wide; has two wings running backwards for sixty-two feet; and a corridor to each story looking into the court. Its internal arrangements are similar to those of the other buildings, but differs from their's, in having all the apartments opening into the corridors, and the upper communicating with the lower story by

* See Plate VII.

three flights of steps; one in the middle and one at each end of the building. There are twelve parlours, twenty-four chambers, and three kitchens in the second story; but in the first story the chambers are wanted, and other apartments are substituted.

Take it altogether this is a delightful building for either the sick or the well, and is as comfortable a place of residence as can be reasonably desired by the traveller during his irksome and tedious quarantine.

These houses are designed for persons in health, but are also inhabited by the infirm, if they are not infected with a contagious disease. To add still more to their comforts there is a well of good water in every yard. Besides the buildings described, are the *lavaderos*, or wash-houses; the *sahumerios*, or smoke-houses, in which the quarantined are fumigated; the porter's lodges; and other buildings, among which are the watch-towers, built along the inner wall, and overlooking the establishment.

Of the cemetery and *corral* I will only remark that the former is at the northern, and the latter at the southern extremity of the lazaretto, and that both are extensive—the cemetery containing nearly two, and the *corral* almost four acres.

To conclude the description of this admirable establishment, I may observe that, being divided and subdivided into so many parts by its walls, it is quite a labyrinth; and the walls being so high and strong it may be used as a prison* or a fortress. But, nevertheless, it is a pleasant abode both in winter and summer; being warm during the former and cool during the latter season. In summer, vegetation being shielded from the ardent rays of the sun by the great height of the walls, and in winter being protected by them from the chilling blasts of the northerly winds, is always verdant, and wears the freshness of spring. In the coldest weather the grass covers the avenues, yards, and lots, with a coat of the richest green; and daisies and other flowers are seen enameling every part.

Here, likewise, throughout the year are found flourishing and growing spontaneously a number of medicinal plants, as the *solanum brutosum*, the squirting cucumber and taraxacum; and in the surrounding-waters are seen the sea-egg, squid, starfish, clavel, and a great variety of other curious animals. If then any physician or naturalist should unfortunately be confined in this place he can never be in want of subjects for observation, but will always have sufficient to prevent ennui, and even to amuse himself until he is set at liberty.

Regulations of the Lazaretto.—As Port Mahon is the place to which every vessel, arriving at any port in the kingdom, must resort for riding out her quarantine, unless it is to be of very short duration, its lazaretto laws include those in force not only in Minorca but in all Spain. The regulations were made by

* It has been in part used for a prison since the civil war began; culprits having been sent there from the peninsula.

the supreme junta of health, at Madrid, and having been approved by the late king are carried into effect by the junta of Port Mahon. This junta consists of the governor of the island, two jurors, one consulting physician, and nine other members, including the secretary. It recognizes the authority of the royal junta, and transmits to it every fifteen days an account of all occurrences relative to the public health which take place in the island, and which have come to their knowledge. The meetings are held weekly, and the members perform duty in rotation, each one attending to it for a week at a time. Some of the principal members are excused from duty; as the governor, who is the president; the captain of the port; and the commandant of customs.

The junta of Port Mahon has deputations throughout Minorca excepting in Ciudadela, which has a deputation appointed by the royal junta at the recommendation of the captain-general of the Balearic Islands.

The physician of the junta is chosen from the most eminent of the faculty: he assists at every meeting, gives the professional information required, attends at the lazaretto when it is necessary, inspects those quarantined, consults with the physician of the lazaretto, and communicates to the junta all important intelligence received from the latter.

Officers of the Lazaretto.—These are the alcayde, his lieutenant, the physician, the surgeon, and the chaplain. At this time the alcayde is Ramondo Orfila, a nephew of the famous toxicologist. He has the management of the institution, and has authority over all persons within its limits. He has charge of the keys of every art, and preserves good order and harmony. When a merchant vessel arrives he is required to go alongside of her, and receive from the master on oath a correct answer to the following inquiries:—What is his name? To what nation does he belong? What is the name of the vessel? Her tonnage? The number of persons aboard? Her cargo? Its consignee? Her port of departure originally? And the day of sailing? If at said port and in the vicinity perfect health was enjoyed? Or, on the contrary, if there were any contagious diseases, or any suspected of being such? If during the passage there were any sick—if any person died? What were the diseases? If she stopped at any intervening port; landed or took aboard any persons; or if she communicated with any other vessel at sea? The alcayde having asked these, and other questions he thinks fit, demands the bill of health, the manifests of the cargo, the certificates of the Spanish consul and other documents, all which he transmits to the junta of Mahon. With men-of-war they are more lenient, asking fewer questions, and only requiring the captain, or his representative, and the surgeon to affirm that they will answer with truth to the questions proposed. The answers are noted down and transmitted to the board. If no quarantine is required the vessel despatches a boat to the health office for *pratique*, otherwise she hoists a yellow flag at her foremast and remains at the anchorage appointed for her, which is

either in the port or in pest harbour. The ordinary anchorage is in the former, near Quarantine Island, a small one, on which is a large building for the accommodation of persons, and the store houses for the cargoes and other effects. As long as a vessel is in quarantine one or more guards, called *sanidads* by English and Americans, from their wearing the word *sanidad* in front of their hats, remain on board. In men-of-war there are always an extra number of them, that there may be enough to go in all the boats which may leave them. The guards are appointed by the alcayde, who, in addition to the duties mentioned, has many more; such as seeing to the discharge of the cargoes, the purification of the vessels, and the making out of wills for persons about dying. If it is required for maintaining order he can command the assistance of an armed force.

At this time the physician of the lazaretto is Dr. Hernandez, formerly of the royal army. He resides in Mahon, and goes down whenever his services are wanted. All the sick in quarantine, except those belonging to men-of-war, are entirely under his control, and those likewise are subject to his inspection, especially if affected with contagious disorders. No person whatever is allowed to be interred until he has examined the corpse.

For an assistant, Dr Hernandez has a surgeon, who resides in the lazaretto, and attends to all business in his absence.

The chaplain is a catholic priest. He likewise lives in the lazaretto, performs mass, delivers exhortations, attends to parochial duties generally, and takes charge of the chapel and all its furniture. To the sick who wish it, or for whom it is ordered by the physician, he administers the sacrament, but with such precautions as the former thinks should be observed.

Of the porters, sanidads, and servants, I will only remark that they vary in number accordingly as they are wanted.

Table of the Charges for Vessels and Merchandize at the Lazaretto.

For Spanish vessels of

From		to				
1	to	20	tons	$0	70	cts.
21	„	40	„		80	„
41	„	60	„		90	„
61	„	80	„	1	00	„
81	„	100	„	1	10	„
101	„	120	„	1	20	„
121	„	140	„	1	30	„
141	„	160	„	1	40	„
161	„	180	„	1	50	„
181	„	200	„	1	70	„
201	„	250	„	1	90	„
251	„	——	„	2	10	„

Besides these charges, infected vessels pay for all extraordinary expenses they occasion; and foreign vessels pay always a fourth part more than national ones.

Charges for Foreign Vessels.

For frigates, brigs, schooners, polacres, and other square rigged vessels	$ 9 60 cts.
For pingues and tartans with lattine sails, .	4 80 „
For javegues and barges, ...	2 40 „
For javegas, laudes, and other small barks, .	0 80 „

Those vessels neither lading nor unlading pay only one half of these charges; but all vessels are subjected to Spanish measurement to ascertain their tonnage.

Charges for Patents of Health,

For vessels of					
From	1	to	25 tons . . .	$ 0 30 cts.	
	26	„	55 „	40	„
	56	„	75 „	60	„
	76	„	100 „	80	„
	101	„	—— „	1 00	„

For bills of health all vessels are charged the same price; that is, two Spanish reals, or ten cents. The cargoes of national vessels thought to be susceptible of contagion, according to their manifest, are charged one-fourth of one per cent., and the cargoes of foreign vessels pay a half per cent. If the master or owner of the vessel should not know the value of the cargo, it is appraised by persons appointed for that purpose by the board of health.

The following is a list of the persons employed out of the lazaretto, and of the salaries they receive;

The consulting physician of the junta, . .	$ 275
A secretary, „ „ . . .	200
The deputy of health, in the Health Office, .	350
The deputy of health at Georgetown, . .	200
The master of the diligence boat, . . .	165
Two mariners of the same each, . . .	110
The guard at the Health Office, . . .	200

The Persons employed within the Lazaretto, are

The alcayde, at	$ 500
His lieutenant, ...	350
The physician, ...	500
The surgeon, ...	330
The chaplain, ...	330
Two porters, each, ...	200
Three guards, ...	650

Twelve supernumerary guards, who when they are unemployed are allowed, each, two dollars per month. The members of the junta, treasurer, and accountant of the treasury, receive

one per cent. of all the money collected. Of the *sanidads*, or guards, put aboard vessels, I will further observe, that they are supported at their expense, and are paid fifty cents a day. This being high wages in Minorca, some believe that there are always more persons employed as *sanidads* than are wanted, and that especial care is taken to put more than the proper complement on board the vessels, and particularly men-of-war, which afford superior lodgings and provisions.

Quarantine.—Agreeably to the rules of the lazaretto, no vessel is considered to be strictly in quarantine until all the moveable articles thought to be infected are purified and taken out of her. Vessels are divided into several classes, as the infected, uninfected, the suspected and unsuspected, according to their condition, the state of their crews, and the health of the places from which they come, or at which they touch on their passage. All those sent away from the coast of Spain to ride out their quarantine; those which come from any infected port, or which have had any person on board affected by, or one who has died of a contagious disease during their passage, are reported to be infected, and to have foul patents. In this class likewise are included those coming from any part of Turkey, from the Archipelago, Levant, the eastern part of Africa as far west as Tripoli, and from the Black Sea; whether they bring foul or clean bills of health, have been sickly or healthy, and have cargoes susceptible or unsusceptible of contagion. Vessels from any of the places mentioned are obliged to undergo a quarantine of at least twenty days, it matters not whether there is, or has been any sickness aboard; whether any of the crew have died of a contagious or non-contagious complaint, or what number of days they have been coming. A vessel having had five days' passage, is quarantined just as long as one which has had thirty; an absurdity not committed by even the Turks, Syrians, or Egyptians, who, deduct the days of passage, and count from the time of sailing.

Vessels, except in the case above mentioned, from the coast of Spain and from Gibraltar are considered to have clean patents, and are not quarantined. Those from the United States are also admitted into pratique, in most instances; but those from any part of America where the yellow fever exists *exotically* or *indigenously*, that is, from between the mouth of the Oronoco and the Bahama channel, are considered to be infected; and whether the disease is prevailing or not at the place of departure they are considered to be suspected. Under this head are likewise put vessels arriving from the Canary Islands between the first of May and the last of November, those from the southern parts of the Atlantic from the middle of May to the middle of November, and those coming from any quarter of the Mediterranean and the Adriatic between June and the middle of October. For vessels suspected there is a quarantine of eight days, or more if it be necessary, unless they be from the coast of Spain and Gibraltar, which, although an English port, is excepted, because of its unlimited in-

tercourse with Spain. Vessels from Veglia, from the ports of Dalmatia, as far down as Ragusa; from the adjacent islands, including the Ionian; from Oran, and all the ports of the Barbary States as far east as Tripoli, are deemed only suspected, provided they bring patents of health, signed by the Spanish consuls; but if they do not they are considered to be infected. Finally, every vessel which has come from any port on the globe, where the inhabitants at the time of sailing were suffering from any pestilential or contagious disorder, are quarantined, even after its extinction, until the supreme junta has declared the place to be in a state of health.

Purifications.—The vexations of quarantine are nothing in comparison with those of the system of purification practised for expelling all contagious and infectious matter from the vessels, their crews, cargo, and whatever else they contain thought susceptible of infection. Vessels of unclean patent, and decidedly infected, are sent into Pest Harbour, and there are unladen, have all their scuttles and hatches opened, are washed within and without day after day, and fumigated every four days with a mixture of muriatic acid, oxide of manganese, and muriate of soda, after the following proportions:

For Vessels of	Muriatic acid.	Manganese.	Muriate of Soda.
From 1 to 50 tons	3 oz.	1½ oz.	2¾ oz.
50 to 100 „	8	2¼	7¼
101 to 200 „	9	3	8¼
201 to 400 „	11	3¾	11¼

Moreover the sails are immersed in sea water for 24 hours and then dried, and the same is sometimes done to the clothes of the crew and passengers. If the vessel's cargo should consist in great part of things thought susceptible of infection, and if she should have lost by disease any of her crew or other person at the port of departure, or on her passage, she is alternately washed and fumigated for six days in succession. The clothes of the deceased are, also, first immersed for three or four hours and afterwards exposed to fumigation, and the vessel is quarantined five days longer; but if the disease of which the person died should be suspected to have been contagious, an additional term of ten days is made, and the quarantine extended to forty days.

After purification, articles unsusceptible can be taken aboard, but those susceptible of infection, as bales of cotton, flax, hemp, and wool, are conveyed to the store-houses, thrown upon the benches between them, and are then untied, have their coverings perforated by hooks, and are rummaged by the hands of the cleansers. Afterwards they are exposed to the air for fifteen days, and turned over from side to side to be completely freed of all infectious matter. Goods in bales or boxes suffer a like treatment, grain of every kind is passed through troughs or gutters: and all jars, and other things containing articles deemed susceptible of contagion, are emptied in order to be purified, and also, if required to be perforated with hooks, which appear to be thought the true and infallible tests

of whatever is good or bad. Wax being considered exceedingly susceptible of the dreaded poisons is first steeped in water, and then exposed to the air. This is sometimes done to any thing else to which water is not deemed injurious, and as, whether it is so or not must be decided by the officers of the lazaretto and purifiers, we can readily believe that great damage is occasionally done to the goods thus treated.

As for the crew and passengers, they are fumigated either aboard or in the *sahumerios* every ten days; and wo to the unfortunate wretches affected with asthma, or any other complaint of the respiratory apparatus. If they are not suffocated, they are at least made to suffer the pangs of death and the torments of the accursed.

These purifications being performed, and a third of the quarantine having expired, the vessel can be removed from Pest Harbour to Quarantine Island, and there remain until pratique is obtained. Vessels of suspected patent have to remain the whole time, excepting perhaps a day or two before communication at the island, and undergo purification in a modified manner, but sufficiently vexatious. All letters, newspapers, and documents are even worse treated than goods; being cut, perforated, stripped of their envelopes, fumigated, immersed in vinegar, and exposed to the air according to circumstances. After being thus maltreated they are most carefully delivered to their owners by being inserted in the split ends of sticks or held out by tongs of prodigious length, so that it is utterly impossible for the owner to be infected by his letters or packages, or by those who deliver them, and also quite as impracticable in some cases for their contents to be read.

The shipwrecked are subject to the same regulations as other vessels; their cargoes and crews being quarantined, and in every respect treated as those of vessels in port. After being purified, and the quarantine has expired, all goods and other effects are delivered to the subdelegate of marine, and made responsible for expenses incurred in saving them.

Persons in quarantine are prohibited from passing beyond the established bounds. If they should do so, for the first offence a fine of two dollars is imposed; for the second offence, a fine of four dollars; and so on in the same proportion. For those allowed to converse with other persons belonging to another ship, or who are in *pratique*, certain places called *locutorios* are assigned. Two of these are upon the island, and several in the lazaretto. Each of the former consists of two stone walls, a breast high and ten or fifteen feet apart. One of the latter is a division of the lazaretto, at the junction of two of the avenues formed by walls, and lofty iron grates fixed within them, and rendering it impossible for the quarantined to communicate, save by speech.

Besides these, there are many more regulations, equally strict and as well calculated to render the quarantines of Spain extremely irksome, tedious, and distressing to those who have the ill luck to

trade with that country, or who, for any other purpose, resort to it and to Minorca. That some of these regulations are useful and necessary; that they serve to maintain the health of the kingdom, and protect its inhabitants from the plague and other contagious diseases, may be granted; but we must, on the contrary, acknowledge that others of them are useless, unnecessarily harassing, unreasonable and injurious to commerce by increasing expenses and protracting voyages. What, for instance, can be more unreasonable, and more prejudicial to trade, than that a ship arriving at Cadiz, in the Atlantic, from the West Indies or any other parts considered unhealthy, should be obliged to proceed to Port Mahon, distant five hundred miles, consuming an unlimited period in going and coming, and, without being allowed any thing for the time thus consumed, discharge her cargo, incur additional port taxes, and ride out a quarantine of thirty or more days.

So vexatious is this system of quarantining to all who visit Spain, whether for profit or on duty, for instruction or amusement, that it is a matter of the most serious importance, to introduce some modification in it; and when these are effected, it would be well to endeavour to obtain similar ones in other European countries bordering on the Mediterranean; for all of them are more or less infested with quarantines, which often appear to be enforced from either cupidity, or superstitious terror; or from an unpardonable ignorance of the nature of the diseases they are intended to prevent, restrain, and exterminate. If these changes cannot be obtained in any other manner, it seems to me that all those governments interested in the commerce of Spain, and of the other regions mentioned where quarantining is rendered such a nuisance, could not adopt a wiser measure than to make this a subject of negotiation.

MARSEILLES AND TOULON.

Marseilles, the greatest emporium of commerce in France, and in all the Mediterranean, is seated on the eastern side of an expanded bay, and around a small oval-shaped basin* constituting its harbour. This basin runs east and west, is 1050 yards long, and 300 wide at the middle, but is less than 100 yards across at its mouth. It is of uniform depth; excavation being constantly employed by machinery to clear it of the mud and other things accumulating at its borders. Merchant vessels of every size can easily enter and moor close to the quays encircling it, but there is not depth of water for a man-of-war larger than a corvette; and frigates and ships of the line visiting this port are obliged to anchor off its mouth, or three miles below, at Endurme,

* Usually called the Mole.

between it and the islands of St. John and Ratoneau, where they can remain perfectly secure unless the wind should blow violently from the south west, in which direction the harbour of Endurme is exposed. Nearly all the gutters, drains, and sewers of the place empty their contents into the basin, and as there is only one outlet to it, and the tide rises not more than six inches, it is nothing else than a general reservoir of filth and corruption. Its water is never transparent, but always muddy, and of a yellowish-green colour, and appears to be undergoing decomposition; which is indeed the fact, for it is excessively offensive to the olfactories, and emits such a quantity of sulphuretted hydrogen that it is useless for vessels in harbour to be painted with white lead, particularly during hot weather; as a much greater quantity of the gas is then formed.

The white paint of vessels lying long in this place becomes as completely blackened as that in the neighbourhood of a sink; the water being rendered much more impure by many of the lower class using the streets as privies. When it rains all the filth is necessarily washed down the gutters and sewers into the basin. It is said, that when a *mistral,* or north-west wind occurs, so much sea-water is driven into this as to clean it out; and this may be done in a measure, but very imperfectly. Aware of the unwholesomeness of this basin, the inhabitants have for some years been devising means of purifying it, and at length have determined to cut a canal from it across the land on its southern side to the bay. If this canal is made of large size it may remedy the evil in a degree, but it is extremely doubtful whether this can be perfectly effected in any manner, so great is the quantity of filth daily discharged from the city, and thrown from the hundreds of vessels crowding the diminutive harbour.

The city appears what it really is, a grand manufactory, and a place of great commerce. It differs, however, in appearance: the old part, which is on the northern side and about the basin, being much crowded, having extremely narrow and irregular streets paved with pebble, and no side walks; whereas, the new part, which lies back and towards the east, has wide streets paved with pebbles and stone flags, and crossing at right angles several squares, and a number of boulevards of well-grown trees, affording a delightful shade in summer.

The houses in these two quarters differ as much as the streets, those of the former being old, illy-constructed, and without beauty; while those of the latter are new, handsomely designed and built, and very commodious. In both quarters, nevertheless, there is a great want of fine public buildings, and in fact I saw none worthy of description. The people, bent on making money, seem to be illy-inclined to part with what they get for the erection of churches, houses of charity, museums, hospitals, &c. Notwithstanding the great trade carried on, and the vast fortunes made, little display of wealth is made, and it is doubtful whether there is much in the place; for it is said that as soon as a man acquires a fortune he

leaves it, and flies to Paris to live in ease and luxury. I will not positively assert that no public institutions of importance exist, but it is certain if they do, they were too obscure for me to discover them. Marseilles moreover cannot, as of old, boast of her literature; being vastly deficient in schools and libraries, which are always the surest signs of a fondness for knowledge and a cultivation of the intellect.

In Medical Institutions there is an absolute deficiency, and I therefore have nothing to say about them. The only public establishment worthy of special notice is the lazaretto, which is on a large scale, and similar in its plan to that of Port Mahon. It stands to the north of the city, near the bay; occupies several acres of ground; and consists of high stone walls, encompassing a number of edifices appropriated to various purposes. Its regulations, and also those of the quarantine generally, are quite as strict as they are in Spain, and especially towards all persons and vessels coming from the Levant and other eastern parts where the plague prevails; but within the last year the quarantine on vessels from the West Indies has been considerably reduced, and if they are uninfected they are admitted to *pratique* in a very short time. This reduction in their quarantine, will be undoubtedly followed by most beneficial effects to the trade with those islands.

All merchant vessels quarantined are sent, until intercourse is permitted, to a harbour formed between the high rocky and barren islands of St. John and Ratoneau. This harbour has been made more secure by the erection of a lofty stone wall extending from one island to the other, and across the entrance on the south-west. That on the north-east being opposite the island of Chateau d'If and the main land, no damage can be done the shipping either by the wind or sea.

Climate.—This is much like that of other places in the Mediterrean; but from Marseilles being situated so near the Gulf of Lyons, and between the Pyrennees on the west, and the Alps on the east, is somewhat less temperate, being more subject to storms and sudden transitions of temperature. In summer little or no rain falls, but at all other seasons showers are frequent, and in winter the weather is generally both bleak and damp. Of the precise degree of heat throughout any one of the seasons I cannot speak positively; but, during the several visits paid to the place, for longer or shorter periods, it was thus: in April, 1832, the average and medium temperature were 59°; in August of the same year the average was 81°, and the medium 80°; in February, 1833, the average and medium were 54°; in March of that year the average was 51°$\frac{14}{24}$, and the medium 74°½; in November, 1837, the average and medium were 53°, and in August, 1838, the former was 75° and the latter 74°½. It is seen here that the coldest month was March, and the next coldest, November; and that in these respects the climate is similar to that of Minorca. This is to be accounted for in the same manner, viz., by the prevalence of

northerly winds, but at Marseilles they are mostly from the north-west, and not from the north-east, as at that island.

At Marseilles the prevalent winds are these two; but the north-west is most regular, the strongest, and most protracted, blowing there, as it does in the Gulf of Lyons, sometimes for weeks without interruption, and for the most part of the time with tremendous violence. The south-west wind in summer blows frequently, and for several days in succession. At this season, likewise, the south-east occasionally prevails.

From what has been said regarding the city, harbour, and climate, it is plain that it cannot be thought a healthy one; and when we examine the records of history, we shall find that it has suffered as severely from diseases as any city in the world, and especially from cholera and plague—thousands of its inhabitants having been carried off by the former, and so many thousands by the latter pestilence, that it was almost desolated. It is utterly impossible for any town, or any other place, to be healthy with such an inexhaustible fountain of mephitic gases as the basin in its centre, and having all of them penned in by houses and fortifications. In hot weather fevers must of necessity be generated here, and in cold weather, when the humidity of the air thus enclosed is greatly increased by rains, pulmonary affections must be produced in abundance.

To form a correct opinion of the little benefit to be derived by invalids labouring under these affections from a residence at Marseilles, it is only necessary to go to the protestant cemetery at the back of the city, and view the numerous graves and tombs of English and Americans buried there, and who, having left their homes to seek a restoration of health in the south of Europe, terminated their earthly career in that city, the climate of which, though milder than that of most parts of the United States, is very little better suited for consumptive patients than they are, and is much inferior to that of many places in the Mediterranean which are situated more to the southward.

TOULON.

Thirty miles to the eastward of Marseilles is Toulon; the great naval depôt for the south of France. It is situated on a capacious harbour, surrounded by hills and mountains, and is as perfectly protected from the sea and wind as it is possible for any harbour of the same size to be. The town is built on the north-eastern side of it, at the foot of Farrón, a lofty, barren, craggy, and elongated mountain of a grey colour, and forming a prominent land mark for navigators. This town is very strongly fortified; being not only defended by a deep fosse and almost impregnable wall upon the three sides looking towards the land, but by batteries and forts crowning every eminence of importance, and defending every approach both by land and water. On the eastern side of the harbour the forts extend in a chain from the top of Farron to the water's edge,

and on the western side from the mouth of the harbour around its head to the town, directly in front of which are moles running out from the shore; and these being connected by bridges and other moles, serve not only for batteries of great strength, but for a foundation to the magazines, workshops, and other buildings. The wet and dry docks lie between these moles and the town, and contain a host of men-of-war, of every size from that of a brig to that of a three decker.

Toulon contains 30,000 inhabitants, and probably more if we include soldiers, sailors, and artisans employed in the navy yard and docks. It is very compactly built, is laid off with much regularity, has narrow but strait, well-paved and cleanly streets, and several small squares and boulevards. The houses being confined by the walls are necessarily high, being from three to six stories. They have contracted yards and gardens, roofs of brick tile, and are furnished with chimneys, but rarely have balconies or courts. Their floors are of polished hexangular bricks, and their stairs are made of the same, but to prevent fractures have edges of wood. All the houses are of stone, and plastered on their outsides.

To the east of the town is the parade ground, a very large, level square, surrounded by a handsome growth of sycamores; and, extending westward, along the back of the town is a broad promenade planted on each side with the same kind of trees. Between this promenade and the mountain is a large botanical garden, kept in excellent order, and containing a great many rare plants, which in cold weather are put into the hot houses, and in warm set out upon the sides of the walks. By each plant is fixed an upright board on which its name is inscribed; so that it can be known at first sight by visitors unacquainted with botany. This garden and the town itself are copiously supplied with the purest and coolest water, which is conducted from the mountain, and rushing down the gutters in every street, or running in pipes beneath the pavements and houses, is poured forth in numerous hydrants and fountains.

The valleys, hills, and parts of the mountains adjacent, are well cultivated, and thickly spread over with cottages and chateaux.—Each of the former is seated in a small farm sowed with wheat, or planted with vines, olives, and other fruit trees. The vines are planted in rows and between hills of earth, formed by ploughing deeply, or by piling it up with hoes and spades, so as to form alternate trenches and hills. The bodies of the vines are rarely more than eighteen inches high, being closely pruned every year, and the soil, which consists chiefly of red clay and sand, being rather poor. The olive trees are of the dwarf kind, but bear abundantly, and produce fruit of the best quality.

The most productive parts of the country are east and west of the town, in the plains and valleys; the most barren are those around Fort Emperor, or Napoleon, on the west side of the harbour, and the summits of the mountain, which are arid to an extreme, and produce nothing but a few dwarf cedars and pines, a species of euphorbia, and some other plants. Farron and all the

other mountains are formed of limestone, primitive and secondary, interspersed with some quartz, disposed in strata, and composed of white pyramidal and cuboidal crystals, easily separated by clearage. Farron at the top is a mass of solid rock, covered with small, loose fragments, either ash coloured, hard, and compact, or white and soft, accordingly as they are of the common limestone, or consist of chalk. From Fort Farron, which crowns its most elevated part, a delightful prospect is to be had of the sea and islands, as well as of the town and harbour: the country around it, and of the lower range of Alps bordering upon the Gulf of Genoa, and which, though compared to the higher range, are low, are nevertheless covered with snow even in the spring, from one end to the other, and are most brilliant ornaments to the eastern borders of Provence.

Hospitals.—Those claiming our attention most, are the old and the new Marine Hospitals. The first one is in the town. It is a building of common size, and without any thing striking about it, excepting an observatory on the top for astronomical and chronological observations. In the wards most of the sick seamen belonging to the navy are accommodated. This hospital being too confined in its location, and too contracted in size for such a number of seamen as are employed at Toulon, and belong to the ships constantly going in and out the port, the new marine hospital, or that of Saint Mandriez, was begun about ten years ago, and has lately been completed and furnished. It stands on the southern side of the harbour upon a peninsula, between its entrance and the sea, and opposite Fort Malgue. It is a few rods from the water's edge, occupies a level spot, and is overlooked by the hills forming the peninsula. This building consists of a central one and two wings, running forwards towards the harbour, and forming three sides of a square, or court. Each of the three parts is three hundred feet long, fifty wide, and three stories high; and all three are made of hard limestone, partly hewn, partly rough, and coated with a cement of lime and pulverized limestone, used as a substitute for sand. The wings being several yards a-part from the main building, are connected at the second and third story by iron bridges. In each story of the wings are two wards, capable of holding precisely forty beds, so that there are twelve wards, and all of them together can accommodate 480 patients. In the main building are the dispensary, the baths, and the apartments of the officers; both of the sick and well. The garrets and cellars are arched, and serve for store-rooms. The stairs are of hewn limestone, and the floors of hexangular bricks. In each of the three parts the staircase is in the centre; and running around the wards of each story of the wings is a corridor, which on the outside has a row of huge square columns supporting arches, between which are the windows. In fine, the roofs are of glazed, brick tile, the walls are of great thickness, and every part is made for use and durability, and yet in the neatest style.

In front of the hospital, uniting the wings and completing the square, are two handsome stone porter's lodges, and a fine

iron railing. In front of each lodge is a pretty portico of four columns; and in front of the gate a small dock of hewn stone has been made for a landing-place. At the back of the east wing is a row of one story houses, in which the labourers belonging to the establishment reside; to the back of the west wing a small cove, winding among the hills; and behind the main building a pretty garden, formed of several terraces, rising one above the other and extending its whole length. This garden is cultivated with great care, and contains many rare plants. It is worked by convicts sent from the dock-yards, where they are kept. While speaking of these miserable beings, it may be well to state that altogether they amount to four thousand, and are employed in all public works. They built this hospital. Working in the dock yards, and being generally employed in rowing the public boats engaged in taking things about the harbour, they so far from being a burden to government, save it a vast expense; for they wear nothing more than a complete suit of coarse red cloth, and a red cap, and live on the coarsest fare; when they behave well they are allowed a few sous a-day. A good many obtain a little money by making the shell of the cocoa nut into a variety of curious things, as snuff boxes, bottles, needle cases, &c. Others make beautiful grass purses and straw boxes. All these articles are made with great taste, particularly the cocoa nut, which is carved into numerous figures, and after the style in which ivory is worked by the Chinese. In the hospital is a room filled with these things, which are sold by a convict to visitors.

At the east end of the garden is the chapel. It is a rotunda of hewn stone, about fifty feet in diameter, with a portico of twenty-four Ionic columns, and a dome surmounted by a cross. Towards the harbour it has a magnificent flight of steps descending to the level ground on which the hospital is built. Within, this chapel is still more elegant. Its ceiling is finely stuccoed, its floor made of variegated marble superbly tesselated; its walls are ornamented by a gallery of burnished brass and steel, and by sixteen Corinthian pilasters; and its altar is decorated by a handsome oil painting of Saint Mandriez, laying his hands on the head of, and ordaining Saint Seprien, who is kneeling at his feet. This chapel is constructed of a limestone of superior quality, procured at Calisanes, and is, I think, a master-piece of architecture, as well in design as in execution.

On the high ground above the garden is the reservoir from which the establishment is supplied with water. This reservoir is likewise made of hewn stone, is of a crescentic form, chiefly above ground, flat on top, formed of strong walls and arches, and divided into distinct chambers, the water entering into one, and being strained through charcoal and other substances into another; then from it into a third, and so on until it reaches the last one, and gets to the pipes by which it is carried and distributed to every part of the hospital.

The length of the reservoir is 150 feet, its breadth 50, and its

depth 30; and it has below doors of entrance, through which its interior may be inspected. The water which it contains is that brought by aqueducts from the summit of the peninsula, and collected when it rains from the roof; which being slightly inclined, and perfectly impermeable, from being coated with water-proof cement, throws it into the pipes leading below.

To return to the hospital: I will observe that it is in every respect admirably suited for the purpose for which it was designed, and appears to want nothing calculated to promote the health and convenience of its occupants, who, however, are now small in number; the town hospital, as stated, receiving most of the patients. The whole cost of this establishment was only a million of francs, or short of two hundred thousand dollars. In this country it would have cost at least double that sum; and the only way in which we can account for its cheapness, is by supposing that a large sum was deducted from the expenses, by the workmen being convicts and receiving nothing for their labour. With the government of the hospital I did not become sufficiently acquainted to be able to give any interesting information on the subject; but I saw enough to be convinced that it was of the best kind; and that both persons and things were kept in excellent order, every part being neat and well arranged, and no disorderly conduct having been witnessed within the houses or within its precincts. All the persons, whether patients, servants, or convicts, were quiet, decorous in their deportment, and seemingly as contented as any other people. I can then very properly set forth this institution as in every respect a pattern of excellence, the buildings being finely planned, the architecture chaste and durable, the location convenient and salubrious.

Much more might be said of Toulon; for though small, it contains either within its walls or neighbourhood many things worth the attention of a stranger: but the naval or military man will find vastly more to amuse him from the place being a great naval depot, and likewise a well garrisoned fortress, and thus affording innumerable opportunities of improvement in every branch of his profession.

SICILY.

If he be in search of a country where he may safely reside, and escape the blighting cold of the north, the consumptive invalid, in my opinion, cannot in all the south of Europe find any place better suited for him than that which he may select in this delightful island. Situated in the centre of the Mediterranean, at the most southern part of Italy, having only one chain of mountains in it, which though in winter partly covered with snow, yet, as they run from east to west,

forming a barrier to the northerly winds, its climate is decidedly more mild than that of any other portion of Europe. But Sicily is not alone agreeable as a residence on account of its climate. Its beauty, its fertility, the abundant store which it possesses for the antiquarian or naturalist, make it still more attractive; and while the traveller may be improving the health of his body he can at the same time attend to the improvement of his mind. Having amused himself with seeing all the curiosities of Palermo, he can readily transfer himself to Messina, and being satiated with its pleasures he can quickly remove to Catania, where are to be seen many relics of antiquity mingled with the wonders of modern art and science. Instead of finding that city in ruins, and still oppressed by the flood of lava which overwhelmed her in 1669, he will see her, phœnix-like, revived from her ashes, and flourishing with more than her pristine splendour. Indeed, I have never been so agreeably disappointed in visiting any place. Instead of finding, as I had supposed, a miserable town built over the ruins of the other, I found myself in a beautiful city, with a population of more than 60,000 souls, and containing almost every thing calculated to amuse and instruct. Its streets are wider than those of any other in Europe which I have visited; they intersect each other at right angles, and are well paved with lava flags. The gutters are in the middle of the streets, and have across them small moveable iron bridges for the convenience of foot passengers when it rains heavily, and the gutters *are* filled with water. The houses are large, especially those of the nobility and gentry, have walls of great thickness, and are built of a yellowish white stone, and of lava; the former being used in front, the latter within and at the back. They have courts, balconies, tile roofs, and floors of brick or stone, and large apartments communicating by doors, not by passages, and decorated with fresco paintings. The houses are generally so large that a family seldom occupies more than the rooms upon one floor.

The public buildings are numerous and handsome, and convents and churches abound. Of the former, the most noted, spacious, and beautiful is the Benedictine convent. It stands on a hill at the back of the town, and from the dome of its church commands a splendid view of the sea, city, Cyclopian rocks, and the eastern side of the island. From this part is also seen all the south-eastern face of Mount Ætna, and the deserts of lava formed by the eruptions of 1381, and 1669. These deserts are craggy, rugged, black, and bare, exhibiting no other signs of vegetation than a scanty growth of prickly pear and a few other plants, except where the lava has been broken to pieces and covered with earth for making a garden; as has been done behind the convent. The desert of 1669 extends from the village of Nicolosi, and Monte Rossi, where the eruption occurred, to the sea, a distance of ten miles, and varies in breadth from two to four miles. New Catania is built upon its northern border, and Old Catania is buried beneath it, with the exception of a few buildings, which were saved from

being situated on eminences, as was this convent. Superstition, however, does not attribute its safety of the latter to its peculiar location, but to divine intervention and the exercise of a miracle; for it is said, and believed, that when the stream of red hot lava was flowing down the mountain, and, having overwhelmed farms, forests, and all other obstacles to its progress, had reached as far as this building, it divided into two branches, left it unharmed, and passed on to deluge all the rest of the Catania.

Almost all of this lava is now solid rock; of a russet black, or of a dark brown colour externally, and of a dark grey internally, marked by black spots, and presenting the appearance of granite. The large masses are divided by fissures, formed in cooling into many small ones, which can be easily quarried and converted into stone for building, or for other purposes. Such is the hardness of this lava, that it is very doubtful whether it will ever be converted into mold and rendered susceptible of cultivation. Two thousand years seem too short a period for that change to occur, though, as stated, it may become sufficiently covered with soil in that time to produce a scanty vegetable growth.

The convent is on the largest scale, occupying as much space as a square. It has two spacious courts, and a church of ample dimensions adjoining its northern side. This church has its floor and chapels composed of the richest variegated marble and lava; which are so much alike, that when polished it is difficult to tell them apart, and perceive any difference. In it are likewise to be seen one of the finest and most beautiful organs in Sicily; one hundred and twenty seats; and forty eight scriptural bas relief scenes cut out of Brazil wood; and twelve paintings done by the best artists. Among these the most striking is that of Saint Agatha, the guardian of Catania, having her breasts cut off, and undergoing death, rather than forego her devotions and marry agreeably to her father's wishes. This inhuman parent is represented as being present at this horrid scene.

In the convent itself there are many objects worthy of regard. Of these the principal are the library, the museum, the banqueting-rooms for the monks, the abbots' apartments, and the grand staircase.

In the museum are many modern and antique curiosities, well arranged and preserved; but by much the most valuable are the latter, which have been collected in the island, and chiefly at Catania. Among them are many tombstones incased in the walls; and retaining the original inscriptions in perfection. They are all written in Greek and Latin characters, and are made of marble.

The banqueting-rooms, two in number, are of a size appropriate to that of the building and the number of the monks, and finished with good taste. Of the stairs I will merely state they are of the most ample dimensions, and have both the balustrade and steps made of the most precious marble. In the abbots' apartments, besides other superb furniture, are a number of tables covered with

slabs of mosaic, formed of the most beautifully coloured lava, representing different prospects with singular exactness and beauty.

Of the churches, the most remarkable is the cathedral; a noble building, constructed of the materials commonly used—stone and lava; and containing, besides other valuable things, the bust and pavilion, with the relics of Saint Agatha. The bust is covered with precious stones; and the pavilion, and the tomb in which the relics are preserved, are made of superbly chased silver. Should the invalid happen to be at Catania on the festival of Saint Agatha, he will see these things displayed with great pomp, and transported, on a platform fixed upon rollers, to every church in the city by the multitude, who, dressed in white gowns, and wearing white cotton night caps instead of hats, are so enthusiastic that they take the place of horses, and crying, "Viva Santa Agatha," amuse themselves the whole day and night in hauling her ladyship about. This festival is also celebrated by horse races in the *Strada del Corso;* by operas, dances, firing of thousands of crackers strung on poles; and by the ladies muffling their faces in black silk cloaks, displaying only one eye, and running about the streets and squares to accost the gentlemen, and hold conversation with them without discovering themselves.

The only other church I shall mention is that of *Restorata*, or the Restored. This is a very small one, but particularly worthy the notice of a physician, from its being lined by the grateful offerings of persons who have been afflicted with disease. These offerings are mostly wax preparations representing the diseased limb, or other part of the person affected. The imitation of some of them is very good, the diseases being accurately copied, and the collection would become a museum of pathological anatomy. Besides these offerings are others of paintings, depicting dangers encountered by sea and elsewhere, and escaped by the guardian care of Saint Agatha. This church takes its name from a statue, plate, and other treasures belonging to some other one having been stolen and concealed among the rocks of lava, where they were found and restored. To mark the spot, and commemorate the happy event, the church was built.

Catania is not wanting in literary institutions. The principal ones are the gymnasium and the university, both of which are large establishments and well organized. In the latter, most of the sciences are taught, and among them that of medicine.

Nor does this city, although it has been so utterly destroyed, want antiquities to render it interesting; the chief of them are the Greek Theatre and the Roman Amphitheatre. The former, from standing on a declivity, was not entirely overwhelmed by the eruption of 1669, and is partly above ground. It is built of hewn lava, has its benches covered with white marble, and has around it three arched galleries one above the other, ten feet broad, and from fifteen to twenty high.

The amphitheatre having been situated below the declivity was

perfectly deluged, and now remains hid in eternal darkness beneath one of the public squares; it being necessary, as at Herculaneum, to make use of flambeaux when it is explored. In construction it is similar to the theatre, having vaulted galleries, &c., but it is on a larger scale. The galleries and the rooms of the gladiators are the only parts from which the lava and ashes have been removed.

Besides these antiquities, and those already spoken of as being at the Benedictine convent, there is a valuable collection in the museum of the Prince of Biscari, consisting of Etruscan vases, statues, other specimens of sculpture, and many specimens of bronze armour and household implements. In this museum are likewise a large collection of minerals, shells, and other things to attract the attention of the naturalist. This valuable museum was formed by the present Prince of Biscari's father, of whom it contains a statue made of white marble, and standing upon a pedestal of finely polished lava.

Weary with looking at antiquities, and desiring to see things of the present age, you may next proceed to the museum of Chevalier Gioni, a knight of Malta, and a gentleman of great urbanity and intelligence. He is a brother of the celebrated naturalist, who spent ten years in making this collection, and was honoured with a fellowship by the Royal Society of London. This museum is contained in six or eight rooms, communicating by doors; is kept in the neatest manner; and is formed of a collection of all the minerals and shells, and other things belonging to Sicily and to Natural History; and also a splendid cabinet of all the varieties of lava which have been thrown out by Ætna, Stromboli, and Vesuvius. These specimens of lava amount to many hundreds. They are in their rough and natural state, and also in that of the highest degree of polish; those of the latter kind being cut into different figures, commonly into thin flat blocks, and made so smooth that all their rich and variegated colours are fully displayed.

Having seen the curiosities of the city, the traveller may then, if introduced properly, engage in a most hospitable and genteel society; or wishing to visit the top of Ætna may readily do so if in summer, but if it is winter will have to encounter many difficulties, and undergo such fatigue, that he should not undertake the trip unless he is in the enjoyment of the most vigorous health. To a person who is asthmatic, subject to hæmoptysis, or any other affections of the lungs, the attempt would be both vain and dangerous. The distance being twenty-eight miles, the mountain very steep after passing the bosco or forest, which is eight miles from the summit, and the ascent being at that season made vastly more difficult by the mountain being covered with frozen and slippery snow, at least two days are required by the most active to perform the journey.

In February, 1832, I joined a party of four to make the ascent. Every preparation was made to cause success; our landlord accompanied us with a supply of provisions; two of the best guides were

employed; and to render the journey less fatiguing we left Catania in the afternoon, and slept at Nicolosi, a village ten miles on the road. Leaving there by torch-light the next morning, at half-past two o'clock, we again set off, rode through the forest, left our horses and mules at the English house,* on its upper border, and then, sanguine of success in our enterprize, went on afoot. But we were doomed to be disappointed, the ascent was so excessively difficult, and the wind, and the snow, which began falling soon after we quit the house, beat so violently in our faces, that one half of the party gave out from fatigue when only half way up. The remainder kept on, reached the philosopher's tower, which is just below the crater, and after having taken a long rest were going on, and were about ascending its precipitous sides, when one of the party, an Englishman living at Catania,† sunk down from excessive cold and fatigue into a state of insensibility, increased by the too free use of brandy; and obliged us to turn back, and carry him down to save him from perishing. Though the top of the mountain was a gently inclined plane, the rarefaction of the air was so great as to cause much difficulty in respiration; and it was impossible from the great exhaustion it induced to proceed more than thirty or forty paces without halting to rest and take breath. At the moment we turned back, although the snowing continued, and must have occasioned a rise in the temperature of the air, the mercury in Fahrenheit's thermometer was seven degrees below the freezing point. Having hurriedly dragged our companion down, resuscitated him by refreshments and a good fire in the English house, we remounted, rode through the forest in a hail storm, and to Nicolosi in a shower of rain, which rendered the descent so muddy and slippery, that we have good reason to be thankful for not having our necks broken by being thrown down some of the precipices by which we rode.

Leaving Catania you may proceed to Syracuse, which is about forty-two Italian, or about forty English miles distant, either by the sea-coast or by the town of Leontini, anciently Leontium, and five miles in the interior. By both routes it is necessary to cross the Simeto, the ancient Symethus, a narrow, but rapid and deep stream, flowing around the foot of Ætna, and seven miles from Catania. Going by the sea-coast you must not only cross the river, but also an inlet of the sea quite as wide; and in either case a ferry boat is required, unless in the latter one you are willing to ride across a sand bar, over which the surf is constantly breaking. At Leontini there is nothing of importance to be seen, except its lake, famed for eels, and about four miles in circumference. A mile from this town, upon the road to Syracuse is the village of Carlentini, and the extensive ruins of an ancient Roman fortress, which stands upon a high, precipitous, and nearly inaccessible hill, around which the road passes. From this hill a glorious view is presented of the fertile plains and valleys below of Catania, majestic Ætna, and the

* Called by the natives, Grotto Degli Inglesi.

† Contrary to my advice, some brandy had been brought with us, and to the use of it may be ascribed in a measure this accident.

meandering Simeto. Ten miles from Leontini is a most lovely ravine, several miles long, having perpendicular and frightful precipices on its sides, varying in breadth from two to four hundred yards, and having its bottom covered with cottages and fruitful farms, through which, winding from side to side, runs a crystal stream. Overhanging the precipices are olive and other trees, up whose inclining trunks goats were seen clambering to browse upon the leaves. The road passing close by the precipices on the eastern side, it is hard to decide whether one feels, as he rides along and looks below, more admiration or more horror. If he should be travelling in a *latigo*, a queer kind of vehicle without wheels, and carried by two mules—one being before, the other behind—between two shafts, I am sure the latter feeling will predominate, for he will then have a double chance of tumbling down, as the stumbling of either mule would cause the latigo to loose its balance. This part of the road, as well as all that going over the hills and mountains, is a mere foot path, which has been used for so many centuries, that the mules and horses have worn trenches twelve inches deep, in the limestone rocks. There is no other choice, therefore, than that between riding in this vehicle or on horseback, it being perfectly impossible for any carriage with wheels to get along.

Thirteen miles from Syracuse, on the upper route, is a square column of hewn stone, of a somewhat pyramidal form, about twenty feet high, and commemorative of some unknown event in ancient history; and three miles from Syracuse, near the northern wall of the ancient city, is a similar column, said to have been erected by Marcellus to commemorate its downfall and capture. On the sea-coast, eight miles from Syracuse, stands the town of Augusta. This is situated on a peninsula, looks well at a distance, and contains eight thousand souls; but is noted only for its exportation of honey, oil, wine, and salt, which is manufactured there in large quantities.

Having passed the monument of Marcellus you ascend a precipitous road, which leads up from the plain to the top of an extensive and almost perpendicular declivity, and extend from the sea to the distance of a league or more in a north-westerly direction to the foot of a lofty conical rock, on top of which are the ruins of an ancient fortification, and a telegraphic staff. This rock has a cistern hollowed out of its top, capable of containing many thousand gallons of water, and I believe is the site of the fortification taken by the Athenian army at the commencement of the siege of Syracuse, and called Labdalon. From the summit of this rock, if the invalid has the strength and breath to clamber up its steep sides, he may acquire a more perfect knowledge of the topography of ancient Syracuse than from any other position; for it is the highest point in the vicinity, and commands a prospect of all the ground it occupied—which was twenty miles in circumference—and of the sea, and the rich and beautiful country to the north and south. The greater

part of the ancient city was built upon a piece of table-land, having a vast rock of secondary limestone for its foundation, of a triangular shape, bounded on the east by the sea, on the west by the lovely valley at the head of the great harbour, and on the north by that in which the monument of Marcellus stands. On each of the two last named sides is a rocky declivity, rising about a hundred feet above the ground below, and in part overgrown by olive trees.

The other portion of the city covered the island of Ortygia, on which modern Syracuse is situated, and the plain between the mainland opposite the Island and the western declivity.

At the foot of Labdalon is the village Bellevidere, and beyond it to the east, a deep trench cut through the rock; and on its eastern side are the ruins of a triangular castle built of huge blocks of limestone, and placed at the junction of the northern and western walls which may be traced along the brink of the precipices for miles. The walls of the castle, and those first mentioned near it, are quite perfect; but those at a distance are thrown down, the blocks of stone, lying in confused heaps at the foot of the precipices and adjacent to the sea, are traced with great difficulty; the greater part of them having had their materials appropriated to other works, or are moldered away, or being buried beneath the earth.

Within this triangle were included the three quarters of the city called Epipolæ, Tyche, and Acradina. The fourth quarter was Neapolis, placed between them and the island, and the fifth was Ortygia or the citadel. The latter, as stated, is the modern city, and is two miles around. It is encompassed by walls, but they are of late construction: next to the harbour and sea they are single, but next to the mainland are triple, and have between them deep and broad moats filled with water. Across these moats are drawbridges, forming a communication between the city and country.—There were three harbours to the ancient city, that of Trogilus, towards Augusta—an expanded bay with a small cove, at the foot of the northern wall;—the small harbour on the east of the island; and the great one on the west of it, which is the only one now used. This is five miles in circumference, has a narrow mouth, on one side of which is the castle of Maniace, on the other the promontory of Plemmyrium, and Egg Rock, undoubtedly the same to which the Syracusans tied the chain stretched across the entrance from the city, to prevent the escape of the Athenian fleet, after the defeat of Nicias and his army. Into the north-western side of this harbour empties the River Anapus, now a small stream obstructed with weeds and with steeping hemp. Between this river and the western declivity is a perfectly level plain, partly cultivated, partly fenny, and producing the papyrus plant, anciently used for making paper.

To the west of the river are the only two remaining pillars of the famous temple of Jupiter Olympus, where Hamilcar encamped to see his army destroyed by pestilence and the sword of the besieged. Choosing such a site for his camp, it is not to be wondered that his army should have so soon become sickly and been so

ravaged by the pestilence; for this is now the most unhealthy part of the country in the vicinity of Syracuse, and a grand source of malaria. When the wind blows from the north-west this is propelled immediately across the harbour against the city, which, were it not for this plain, might be said to be as well located for health as for commerce. At the north-eastern side of the harbour empties another stream of water—which is that brought from the mountains by the aqueduct of King Gelon, and being no longer wanted for drinking, turns three small mills situated where it falls over the western declivity into the ruins of the Greek theatre. One mill stands in the middle of the benches cut out of the rock, and the others are placed within the western wall, near the termination of the aqueduct. This everlasting monument of Gelon begins at the base of Mount Hybla, passes around the foot of Labdalon, thence through the fields once the site of the ancient city, to the precipice just above the theatre. The aqueduct is mostly cut through the rock, and is arched over with the exception of the air-holes, left at intervals of several rods, and about a yard in diameter.

Near the mill, at the angle where it turns towards the precipice to empty its water into the two basins hewn out of the rock beneath, the water has been diverted into a modern aqueduct nearer the sea than the ancient one, and resting upon arches. This aqueduct has been made to give the water a greater fall, and to enable it to turn the two mills above the declivity. After turning these and the other mill, the water irrigates the gardens below, and then disembogues into the harbour. Between the theatre and the seashore the precipices are much more irregular; the rock being cut and excavated into vast chasms and hollows for the purpose of procuring building stone and salt-petre—the last an abundant ingredient, obtained by pounding the rock, washing it in water, and then boiling down the solution. The Ear of Dionysius seems to have been made as much to procure this valuable article as to serve for a prison; and the captive slaves and convicts appear to have been secured, and at the same time to have proved profitable to the state. The ear is a horizontal excavation twenty feet wide at the bottom, gradually becoming narrow to the top, and forming the letter S. Its height is nearly sixty feet at its entrance. The small chamber just over this, for the sentinel; the gutter of fluted tiles, for conveying water to the prisoners; the watch-tower at the top of a part of the rock left standing in front of the entrance, are still to be seen. Near the ear, and farther eastward, are a number of grottoes made in the same manner, but much lower and wider. Some of these are inhabited, and in one the people are employed in making the muriate of ammonia from camels' dung imported from Africa.

Besides these cavities are others of greater extent. Among them are the gardens of the Marquis Casala, that of the Chevalier Landolini, and that of the convent of Capuchins; or what are termed the *latomiæ* or quarries. All of these gardens are at the bottom of deep cavities made by the removal of the stone; but that of the first and last named are much the deepest, being about seventy feet

from the top to the bottom. All of them are highly cultivated, and produce fruit and vegetables of good quality.

The convent of Santa Lucia is in one of these cavities, but it is the most superficial. In this convent are some good paintings and statues. Of the former the most remarkable is that of Saint Christina in prison. She is naked, emaciated, pallid, and exhibits that distress suffered by a person starving to death; but her countenance expresses reliance on Providence, and true Christian fortitude. Of the statues, the best is that of Saint Lucia. It is made of the purest white Italian Marble, and represents her asleep and reclining on a couch, with her head resting on a pillow. Near her left hand is a crucifix; near the right a book and rosary, which have fallen from her grasp. The face expresses every amiable quality of soul; the hands and arms are perfect models of art; and she is altogether so beautiful that the goddess of love herself might envy her.

Near the chapel in which this statue is kept is the mouth of a cave, probably artificial, which the monks state reaches to Catania. In this cave, they say Saint Agatha and Saint Lucia were accustomed to meet and converse concerning Catania and Syracuse, their favourite residences, and over which they now hold guardianship. This story, as regards the length of the cave, is certainly untrue, for there is no proof to substantiate it; and as to the meeting of these devout ladies, no person can believe that their love or friendship could have been so great as to induce them to walk forty miles through a subterraneous passage either in total darkness, or guided by the best light in Christendom.

The garden of the Capuchin convent is very large, filled with orange trees, and planted with shrubbery; it has the surrounding rocks and precipices overgrown with a thick growth of dark green ivy; and has on its west side some grottoes, once used as dungeons for the labourers who excavated the place, and which are now partly converted into vaults for the dead. Access is had to this garden by a flight of stairs cut out of the rock at one end. The convent itself is even more worthy of notice than the garden, from its containing the remains of all the deceased Capuchins who have died there, from the time of its erection to the present period. As soon as one of them dies his entrails are taken out, his body is put into a grave of lime, kept there several days, and until its fluids are dried up; is then taken out, laid upon a table, set on the west side of the house, and exposed to the sun. When it has become completely dried it is dressed, as during life, in a coarse brown, or russet woollen cloth; has a broad girdle fastened around the waist, a large hemp rope tied around the neck, and is then fixed in one of the niches encircling the hall in which are all the deceased.* There the corpse is allowed to remain until the soft parts have entirely moldered away, and the bones have fallen apart from the destruction of their ligaments. This hall is about twenty feet wide, a hundred long, well ventilated and lighted, and has a southern exposure. In it

* A few for want of room lie in open coffins.

I saw the remains of full a hundred Capuchins, in every possible state of decay; from that when they were first placed in the niches to that when they had become skeletons, and had fallen to pieces. The integuments of some were peeling off, and leaving the bones of the face exposed; some had the lower jaw nearly ready to lose its last hold on the upper, and hanging down upon the bosom; and others had lost the arms and legs, and left the sack cloth covering nothing more than the naked bones of the body. The craniums of those who had entirely decayed and fallen to pieces were arranged on shelves above the niches, and there grinned horribly in death on those below. This sight was, without exception, the most disgusting and terrific I have ever witnessed.

To the westward of this convent, near the road to Catania, are four other places of interest. The ruins of what is called the custom-house, of which only a few pillars of parti-coloured marble remain; the tomb of Archimedes; the amphitheatre; and catacombs. This tomb is one of a number cut out of the rock, and has a solitary fluted pillar on one side of its mouth. It is the size of a small chamber, and in its sides has niches wherein the urns containing the ashes of the dead were placed. The amphitheatre is three hundred paces in circumference, of an elliptical shape, has two galleries around it, one above the other; and probably had a third one, after the usual plan, above these, as there is a large quantity of rubbish around the building, showing that its height has been much greater. The lower benches are hewn from the rock, forming the base. The chief entrance is on the north side, and is a spacious arched way supporting some of the upper benches, and extending to the arena: this being covered by a rich soil is now converted into a garden. This amphitheatre when complete was capable of holding, it is said, thirty thousand spectators.

Should the traveller not be too sensitive to cold and dampness, after viewing the amphitheatre and other things above ground, he may go to the catacombs, where he will find a Capuchin Friar, living in a cottage at the entrance, who with a lighted flambeau will descend with him into them, and show their vaulted passages and tombs laid off like the streets and houses of a town. The passages are of sufficient breadth for several persons to walk abreast, are lighted by circular holes at top, intersect each other at right angles, and have the tombs on their sides. The tombs are commonly vaults, with from four to eight graves of about a foot in depth, cut out at bottom, placed parallel to each other transversely, with respect to the vault, and decreasing in size from the front to the back one. In some of the streets are sarcophagi of large dimensions, and in the centre of this gloomy mansion of the dead is a rotunda, forty feet in diameter, twenty feet high, having a vaulted ceiling with a skylight in the centre, and containing within its walls the tombs of the nobility. The rotunda, vaults, streets, and all other parts are hollowed out of the solid rock, and are almost as perfect as when made. So many years have elapsed since these catacombs were used for a cemetery, that they possess

few relics of those who were deposited in them, and only some of their bones are to be seen.

Leaving the ancient, I will now proceed to modern Syracuse; but it is much less interesting, having few antiquities, and no public nor private institutions; neither medical, nor surgical, nor charitable, nor literary, worthy of comment. Its streets are irregular, narrow, paved with lava and pebble, and wanting in cleanliness. Its houses are like those of Catania in structure, and are large and well built, but without chimneys; the climate being so mild as not to require them, unless the weather is uncommonly damp and cold. The only family in the place who used fire for warming themselves was that of the English Consul. If cold, the inhabitants content themselves with additional clothing, and, wrapping themselves up in shawls and cloaks, and covering their heads with silk night-caps, they patiently await the return of warm weather, which is certain to come in a day or two. Indeed, the weather, though frequently damp and raw, is never really cold; the lowest degree of temperature I knew to occur being only 54°, and that for one day. Agreeably to the register I kept while there, the temperature at noon was as follows, for the last five days in December, 1831. The average was 62°$\frac{4}{5}$, the highest 66°, the lowest 58° and the medium 62°. In January of the next year, the average was 62°$\frac{5}{31}$, the lowest 56°, the highest 64°, the medium 60°. In February, the average was 61°$\frac{1}{29}$, the highest 66°, the lowest 54°, and the medium 60°, and during the first six days in March, the average was 59°$\frac{4}{6}$, the highest 60°, the lowest 58°, and the medium 59°. This was the temperature of the air aboard ship in the shade; but on shore, and particularly in the town, it would have been found higher, as it is uniformly increased by reflection where there are houses and other objects to produce that effect. The lowest degrees of temperature were on cloudy and rainy days, which mostly happened in February. Rains at Syracuse are not continued, but interrupted, and fall in showers as the clouds pass over; and this circumstance gives rise to the saying that the Sun shines there at some hour every day in the year.

Excepting some of the palaces of the nobility, the only building worth mentioning is the cathedral, which has been made from the Temple of Minerva: it has a fine front looking towards the only public square in the town, and is decorated with cornices, pillars, and statues of saints and divines. Its walls are principally formed by filling up the interstices of the porticos, which are made of limestone of a greyish-brown hue. The pillars are 25 or 30 feet high, 5 feet in diameter at the base, and of the Doric order. Those of the northern portico can be seen from the street, but to see those of the southern it is necessary to look through the windows or to enter the building, Each of these porticos was composed of eleven pillars. The eastern and western being hidden, the number they have could not be ascertained.

* This was the number I counted, but others may be completely hidden by the wall, as are those of the last mentioned porticos

Opposite to the cathedral is a house in which is a museum of the antique curiosities found in and about the town. Among them are some of high value, as a statue of Venus, found buried in the earth, and an immense *sarcophagus*. The statue is mutilated, but shows the sculptor to have been a master of his art. The *sarcophagus*, as well as the statue is of white marble, and is very slightly injured by time or violence.

An hour can be spent quite agreeably in looking at the works of art in this museum; and when satiated with viewing them, another hour can be spent in walking around the town between the houses and walls, and looking at the sea, the great harbour, the lovely country beyond it, and the famous fountain of Arethusa, gushing forth from a cavern just within the wall next the harbour, and beneath the rock on which the town stands. The water rushes out in a torrent large enough to turn a mill; forms a pool between the wall mentioned and another next the street which passes over it, and then runs beneath the former into the harbour. When we behold such a body of fresh water bursting forth on a low and small island surrounded by salt water, we cannot wonder that the ancients should have thought it miraculous, and supposed it must be the river Alpheus, pursuing its course beneath the sea from Greece into Sicily.

Viewing this fountain, we call to mind the history of Arethusa; but our romantic feelings vanish when we see the pool filled with a crowd of women busily engaged in washing clothes upon the stones, hollowed out into basins by long friction, and exposing to view their sun-burnt legs, left naked high above the knees by the rolling up of their frocks and petticoats. Beholding these creatures, we are all led to this conclusion, that though they may be the real nymphs of the goddess, they are neither modest nor handsome.

In manners and customs the Syracusans are the same as the Catanians; being polite, gay, zealous in religion, fond of dancing, and of all sorts of diversions, particularly that of the opera. Their complexions and temperaments are those belonging to the inhabitants of Italy and other countries in the south of Europe; being sallow and bilious for the most part. The most remarkable thing I observed about their persons was a singularly offensive breath. With this peculiarity I was so much struck, that I endeavoured to ascertain the cause, and at length satisfied myself that it was produced by eating raw the young and tender stalk of the *anethum fœniculum*, or common fennel, one of the most ordinary articles of food, and not afterwards cleansing their mouths in a proper manner. This plant, containing a strongly aromatic oil, appears capable of affecting the breath and the secretions of the body when eaten uncooked. I may have been deceived, but its peculiar odour was as distinctly detected by me as that of garlic has been in other people.

Diseases.—Miasmatic fevers may be called the most prevalent, but they are by no means as much so in the town as in the level country about the great harbour. During the winter I spent at the

place no epidemic disease occurred: not only the people of the town but those of the country and the crews of the five ships having enjoyed excellent health. Venereal complaints appear to be the most common; and syphilis here is either very badly treated, and after the old mercurial plan, or is much more malignant than in this country; for the most common deformity among the lowest class is a loss of the nose from this complaint; and so many persons have experienced this misfortune, that it is one of the first peculiarities a stranger observes. The fact of this class, however, being excessively poor, living wretchedly, and not having the best physicians to treat them, may likewise account for the severity of the disorder. Pulmonary complaints are rare, and the number of deaths from them very few; and judging from the accounts given me, no place in Europe could be more suitable for consumption. While there I became acquainted with an old English gentleman, who stated that having been attacked with a pulmonary affection, and threatened with consumption, he had come to Syracuse twenty years before, and found the climate to agree with him so well that he had continued to reside there ever since, being fearful of a relapse if he returned home. Nevertheless, during damp and cold weather sore throat and catarrh occurred in considerable numbers on board of the John Adams, twenty-five of her crew having been admitted on the sick list for the last affection alone.

Should a consumptive patient, then, resort here, he must not presume too much on the mildness of the climate, and must guard against exposure to bad weather. From not taking the requisite precautions, a medical officer belonging to one of the ships died at Syracuse very suddenly from hæmoptysis, to which he was subject.

VEGETABLE AND MINERAL PRODUCTIONS OF THE ISLAND IN GENERAL.

The vegetable productions are as numerous and abundant as might be expected in a country of such fertility, and possessing so fine a climate. Upon the hills flourish elms, pines, oaks, ashes, and chestnuts; on the declivities, and in the valleys, the *fraxinus ornus*, the olive, fig, orange, almond, peach, pear, apple, and many other valuable trees. The vine abounds every where in the lowlands, and yields vast quantities of the best grapes, from which, by proper care, wines of fine quality may be made; but the people not understanding the mode of preparing them, those of the first quality are manufactured by foreigners who have settled in the island.

The chief articles of export from the vegetable kingdom are manna, for which 40,000*l.* sterling are received annually; saffron, sumach, pistachia nuts, figs, almonds and oranges. Among them should also be included wine, wheat, and barilla.

The mineral productions are not less abundant. Ætna alone

yields a great variety, and in the beauty of her lavas far excels Stromboli and Vesuvius. The principal minerals are coal, rock salt, sulphur, sal ammoniac, bitumen, gypsum, marble, agate, jasper, porphyry, alabaster, iron, copper, lead, and silver. Coal is found in the neighbourhood of Messina, and the muriate of ammonia within the crater of Ætna.

This charming island, moreover, is not deficient in mineral waters both hot and cold; and some springs exist in different parts of it which have been celebrated for ages.

Animals.—Those of the domestic species are plentiful: the horses and mules are large, handsome, and spirited. Goats, cattle, hogs, and sheep are abundant every where, but wild beasts are scarce. Of game, such as woodcocks and ducks—and of the domestic birds, such as turkeys, geese, and fowls—there is a plentiful supply, especially in the winter. Then the markets are well stocked with them: and Syracuse is better furnished than other places with many kinds of the most delicious fish to be caught in the Mediterranean, and which serve not only for home consumption, but, after being salted, for exportation to foreign markets.

A vast deal more might be said of this favoured region; one which furnishes an exhaustless store of almost every thing needed to support life, to make man contented, and to render him as comfortable and happy as it is possible for a mortal to be in this probationary existence. My design, however, is merely to given a sketch of it, and then to attract the attention of persons who are seeking to find a country with a climate suitable to their constitutions, or who are disposed to let no opportunity escape of acquiring information respecting a place which offers so wide a field for investigation, and so rich a reward for the labour, fatigue, and trouble they have to undergo.

Having finished my observations with respect to Sicily, I shall notice briefly another island, which, though it now no longer exists, is yet entitled to our attention from the wonderful phenomena accompanying its appearance and disappearance. I allude to the volcanic island which arose south of Sicily in the summer of 1831; and which was named, after an English captain who first landed, and planted the standard of Great Britain upon it,

GRAHAM'S ISLAND.

The phenomena attending its appearance were these, according to the accounts I have read, and heard from eye witnesses. On the 10th of July, Captain Corrao, the commander of a brig going from Trepani to Girgenti, and from whose name this island was likewise called Corrao, perceived, as his vessel was passing along the coast at the distance of twenty miles, a mass of water sixty feet

high and four hundred fathoms around, rising above the sea, and emitting a smoke which exhaled the odour of sulphur. The smoke continued to issue incessantly during the day; the water to boil and bubble without intermission; and at night flames of fire burst forth and illuminated the sea, the opposite shore of Sicily, and the island of Pantellaria. A noise like thunder was heard; flashes of lightning were seen over the spot; immense volumes of vapour arose, spreading around and curling to a prodigious height; and then succeeded in rapid succession the vomiting forth of lava and ashes, rising as much as a thousand feet into the air, branching out as they ascended, and when they descended causing a thundering sound, and making the sea a sheet of foam. These phenomena continuing, by the 16th of July the island appeared, with a crater in its centre, and, rapidly increasing in size, in a few weeks was 250 feet in height, and a mile and a-half in circumference. Its south-eastern side having been broken down by the sea, the water from time to time rushed in and, pouring upon the red hot lava, caused a repetition in its eruction, and of that of vapour and ashes.

Immediately after the eruption began, vast numbers of dead fish were seen floating about the sea; and I was informed by a Sicilian gentleman who was a state prisoner at Pantellaria at the time, that a few days afterwards they were picked up by the basketful on the shores of that island. These fish were without doubt destroyed by the excessive heat of the water around the volcano, towards which they must have been attracted in great quantities by the light emitted by the flames, and particularly at night when all other parts of the water were in darkness.

The island having attained the size mentioned, the volcano continued to burn slowly for some months, then became extinguished, and was followed by the gradual decrease and disappearance of the island, which was chiefly composed of ashes, and having little lava about it, quickly gave way to the perpetual assaults of the sea, became dissolved and sunk beneath its surface, to form a shoal, the dread of navigators for years afterwards; but which, at this time, it is said, has several fathoms of water. Although not dangerous, this shoal is avoided by vessels, and they run along the coast of Sicily and steer either between this island and the shoal or pass to the southward of the latter. Its position has been ascertained by several navigators; but a little difference exists in their calculations; one placing it in lat. 37° 6′ north, and long. 12° 46′ east, from Greenwich; another in 37° 11′ north, and 12° 44′ east; and a third, in 37° 7′ north, and in 12° 41′. However, as the island has sunk, its precise position is no longer of great importance, though, as it is possible it may reappear, or the shoal may increase, it would be most prudent to avoid going over the part where it was.

Regarding the origin of this volcano there is much doubt, but it has been supposed, with good reason, that it was connected with that of Mount Ætna; and in support of that opinion we have these two facts: that the eruptions of Ætna are generally a great distance

from her summit and crater: that of 1669, for instance, as before stated, occurred at Nicolosi, eighteen miles below; and, again, that before and during the submarine eruption mentioned, Ætna manifested those symptoms of uneasiness and intestine commotion which invariable precede an eruption; such as belching forth flames occasionally, and emitting thick and constant volumes of dark smoke. Of the occurrence of these symptoms, at the time specified, I was positively assured by the English consul at Syracuse, a man of integrity and good sense, who witnessed them, and who from being long a resident in Sicily was well acquainted with the signs and phenomena attending the eruptions of that mountain; and could not, therefore, have been easily deceived respecting them. Judging from these facts, we may reasonably conclude that the bursting forth of the volcano from the bottom of the sea prevented the occurrence of an eruption on the sides, or at the foot of Ætna, and saved the island of Sicily from having some part of its fruitful fields again desolated and converted into a barren and rocky waste, where, for ages to come, neither animals nor vegetables would have been able to procure sustenance sufficient to maintain existence; where heaps of cinders, and irregular masses of black lava, would have been strewed over cottages and palaces, and hidden from view their ever-verdant, ever-productive gardens and vineyards.

MALTA.

This small island, the *Melita* of antiquity, naturally possesses very few objects deserving attention, but so much has been done to improve it; so much labour, and such vast sums of money have been expended upon it, that there is no other island of the same extent which contains more works of art to interest us. Its basis consists of different kinds of limestone, but principally a yellowish one, composed of sand and lime, with a little alum and magnesia; but sometimes the latter substance exists in a larger proportion, and when it does it exhibits the characteristic appearance of this earth. A small quantity of alabaster and gypsum are likewise found. The finer sort of limestone is used in building, and is manufactured into a great many useful and ornamental household implements. Being soft, adhesive, possessing a smooth grain, and no crystals, it can be wrought into any shape, and is sculptured into urns and vases of every size, covered with bas-reliefs, representing flowers, vines with leaves and grapes, birds, beasts, and other animate and inanimate objects, in the most accurate manner. Many of the antique specimens of marble sculpture in Italy have been copied on this stone, and are sold in great numbers, and at most reduced prices, considering the fineness of the workmanship. The softness of this limestone also renders it an

easy matter to apply it to agricultural uses. Mixed with clay and other earths, or manure, after being broken to pieces, it forms an excellent soil; and by the adoption of this practice, the island, from being a desert rock, has become in most parts very fertile, and capable of producing all the fruits and vegetables found cultivated or growing spontaneously in other parts of the Mediterranean. So fertile has the land been made, that it is said to yield from twenty to sixty fold. The chief products are wheat, barley, and yellow cotton, which forms the chief article of manufacture. Of the fruit, apricots, plumbs, figs, and oranges, are the most choice; but the latter are the best, being much esteemed. What is called the blood orange is extremely delicious. It is said to be the fruit of the orange engrafted upon the pomegranate, and when cut open presents the appearance of being streaked with blood. Hence comes its name.

In minerals Malta is very deficient; and though silver, gold, iron, and mercury, are stated to have been once procured upon it by mining, yet at this time none of these metals are to be obtained.

Of animals the number is also limited. Those of the larger species are cattle, mules, asses, horses, hogs, sheep, and goats. The asses are the most valuable, being of uncommon size and strength, and proving a profitable article of commerce. The cattle are of the smaller breed. Many of them are brought from Tripoli for slaughter, and after being fattened make beef of good quality, it being tender, white, and of delicate flavour. Cotton seed forms the chief article of food for fattening them; as, from there being no pastures, they are stall fed.

Sparrows, quails, partridges, swallows, and hawks, are the most common birds. Fish of many kinds are sold abundantly in market; an immense number of boats and persons being engaged in catching them off the mouth of the harbours and along the coast. Among the best fish are the whiting, rock, and tunney. To the latter Dr. Cren has attributed, when it is eaten to excess, the most singular and incredible property of causing a virulent gonorrhœa.* Besides the craw and other shell-fish, the *pholas dactylus* is to be found here, imbedded in the rocks underneath the water in the harbour and along the coasts, but it forms by no means as important an article of food as in Minorca.

Inhabitants.—They bear strong marks of Arabic extraction, being generally of medium size, of rather slender form, and having a dark yellow skin, with black hair and eyes. They cannot be called a handsome people, it rarely happening that either males or females are seen who merit that appellation; but on the contrary they are generally homely. Living in a warm climate, eating little else than fruits and vegetables, seldom touching meat or any sort of animal food, the poorer class, and especially the female part, are a diminutive race, and indicate the greatest wretchedness. The old women often look dried up, are exceedingly yellow, very much wrinkled, and bear the signs of having suffered from a want of proper sustenance from

* See Hennen's Topography of Malta.

their infancy. Nevertheless, the bodily defects of the Maltese are compensated for by the activity of their minds; for they are intelligent, quick of apprehension, spirited, and adventurous. Industry, also, is one of their traits. This, connected with an enterprizing disposition, makes them persevering; fond of emigration, and pursuing any trade or profession by which gain is to be acquired. They are devoted to business and to the acquisition of money, and in acquiring this they are thought by some persons not over scrupulous in making a good bargain, and obtaining by craft what cannot be had by fair means. Hence it is that their reputation for honesty is not as enviable as it is for devotion, and they are said to be more given to chicanery than to fair dealing in trade. In church observances, attending divine service, ringing of bells—at all hours, night and day—and in strictly conforming to all religious ceremonies, they show themselves to be exceedingly devout, and are not excelled by any other people. They are fond of dancing and other innocent diversions; marry early, as they soon reach maturity; and are much more peaceful than warlike.

Population.—This is not correctly ascertained, as it is constantly varying by emigration; but as the births probably exceed the loss from this cause and from deaths, and the population was above 96,000 in 1824, it cannot at this time be under 100,000.

Climate.—Not much need be said of this, as there is little difference between it and that of Syracuse, from which it is less than a hundred miles distant. According to Dr. Hennen, who lived there some years, the minimum of heat was 46°, the maximum 90°, and the medium 68°. Agreeably to my register it was thus: in May, 1832, 72°$\frac{2}{15}$ for the *average, 70° for the lowest, 74° for the highest, 72° for the medium temperature. In October of the same year, the lowest was 70°, the highest 74°, the medium 72°, and the average 70°$\frac{6}{11}$; and in November, the first was 69°, the second 74°, the third 71°½, and the fourth 71°½. In December, 1836, the temperature was 54° for the lowest, 69° for the highest, 61°½ for the medium, and a fraction more than this for the average. The weather during summer is as dry as in other parts of the Mediterranean, vegetation being then parched up; but in the autumn it becomes humid, and frequent showers falling, vegetation revives, verdure is restored, flowers shoot forth, and continue throughout the winter. The climate being so warm, and there being no mountains in the island, snow is never seen, except that imported from Ætna as an article of luxury.

With regard to health, the climate of Malta deserves the title of being decidedly salubrious; there being very few diseases endemic, and the epidemic ones being quite as rare. The island being rocky and elevated, having no ponds nor lakes, nor stagnant water nor marshes, malarious fevers are uncommon. Pulmonary complaints are not

* I should have observed before, that by the *average* is meant the sum of the temperature of the days of the month divided by the number of days; and by the *medium* temperature is meant the sum of the highest and lowest divided by two.

numerous; and persons affected by them are those who are exposed to inclement weather; and among them the soldiers of the garrison, particularly those stationed in the interior of the island upon the heights. Ophthalmia is a common affection in some parts; small-pox seldom occurs; and plague has not prevailed for a great many years, but cases now and then happen in the lazaretto, being imported from the Levant by vessels coming from there.

This awful disease was last prevalent in 1813, and carried off, then, between four and five thousand of the inhabitants, or about five per cent. of the whole population. In the year 1675 it was much more destructive; more than eleven thousand persons becoming victims to it at that period.

The exemption from its ravages of late years is to be ascribed to a change in the mode of living, and greater cleanliness of persons and things; but as we have strong evidence of its contagiousness, some credit is due to the strict quarantine in which all vessels coming from countries where it is endemic and prevalent are retained until danger of infection is no longer feared. In the quarantines, however, there is a want of discrimination, and unnecessary strictness, not only in regard to these but to all other vessels arriving from foreign countries. The day of arrival, and that of getting pratique are taken into calculation, but the time spent in coming is not considered. If a case of pestilential disorder occurs the quarantine recommences. Any person who gives a false certificate of health, or conceals articles capable of acting as *fomites*, and smuggles them out of the prescribed limits; or any person who goes beyond these, either on land or water; or who visits another vessel, is liable to suffer the penalty of death. For other infractions of the quarantine laws a like severity is practised.

Citta Vecchia, or the old city, stands on an eminence five miles from Valetta, which is the capital of the island. It is a small, walled town, with only one conspicuous object about it, and that is the cathedral, which has a handsome dome, of large dimensions, and contains a number of excellent paintings, both in oil and fresco. The former were executed by Calabrese (*Preti*), the latter by Manni. Beneath the floor are the remains of the bishops, and on the covers of the vaults are some beautiful specimens of mosaic. The hats of these divines are preserved with as much care as their bodies, and five of them are suspended and kept dangling over one of the chapel doors, to attract the gaze and wonder of the stranger when he beholds their enormous brims.

Near the cathedral, beneath a small church, is the cave of St. Paul, in which the apostle is said to have lived after his shipwreck; but on what evidence this is asserted I know not, there certainly being a want of proof in the Scriptures. The cave is in a very white limestone rock, appearing to possess as an ingredient a large quantity of magnesia; is about seven feet high, ten broad, and sixteen long; has its mouth closed by a plank door; and looks from the manner in which the rock has been excavated for obtaining specimens, more like an artificial than a natural grotto. For breaking the rock a

pick-axe is kept always ready. The former is asserted, and believed by many persons, to possess the most miraculous property of growing as fast as it is cut away, so that the cave is now not a bit larger than it was when St. Paul made it his abode.

Not far from this cave are the catacombs, which are of great extent, and cut out of the rock. Persons have been repeatedly lost in them; and to prevent any more accidents of the kind some of the passages have been walled up by government. These catacombs being similar to those of Syracuse need no further notice.

VALETTA, OR LA VALLETTA.

This is the modern city of Malta, and takes its name from the renowned Grand Master Lavalette, who founded it on the peninsula between the great and small harbour, and called Mount Scebarras, in the year 1566, immediately after the defeat and expulsion of the invading Turkish army under Soliman II.

The great harbour runs parallel with Valetta, and forms nearly a straight line next to it; but on the opposite side it makes five indentations, each of which is a distinct cove. Between the coves are five peninsulas. Upon the one next the sea, and forming the left side of the entrance to this harbour, is the extensive and formidable fort of Recasoli; on the second are the Naval Hospital and a village; on the third is fort St. Angelo, which stands at its extremity, and is a lofty castle with four tiers of guns, separated from the town of Vittoriosa by a deep and wide fosse. Vittoriosa occupies the rest of this peninsula, and takes its name from the defeat of the Turks before it by Lavalette. Upon the fourth peninsula are situated the towns Senglea and Burmola; the first being on its extremity, the second on its neck. On the side of Burmola, looking towards Vittoriosa is the naval arsenal, where the English men of war are refitted. The fifth peninsula is wider than the others, but has on it only the village Coradina, some scattered buildings, and an obelisk of Maltese stone, erected in memory of a captain in the English navy, who died some years ago.

In the middle of the small, or quarantine harbour, called Marsa Musceit, is an island of a triangular shape, on which are the lazaretto and Fort Emanuel. This island communicates by a bridge with the main land. At the mouth of this harbour, on the right hand side going in, and opposite Valetta, is a small round fort, named Tinier; and at the head of the harbour are the villages of Pieta and Missida.

Upon the neck of the peninsula on which Valetta stands are the town and complicated impregnable outworks of Floriana. Between this town and Valetta is the parade ground for the garrison, and a botanical garden several hundred yards in length, and containing a great collection of exotic and indigenous plants. This garden is finely cultivated, and kept in the best order; sentinels being stationed at the gates to preserve it from depredation.

Valetta itself occupies rather better than half of the peninsula; which being elevated about a hundred feet above the sea, shows off the city to great advantage, and gives it a commanding prospect. The city is encompassed by walls of great height and strength. Some are single, others double and triple, according to the natural strength or weakness of its position. On the side next the small harbour, and at its upper part, where it is narrowest, they are triple; and on that towards Floriana they are double, and are made more inaccessible by a ditch, as deep as they are high, and of corresponding width. This ditch extends from harbour to harbour, and has over it several narrow, single arched, stone bridges, forming communications between the outworks and the city. To prevent an enemy from gaining access to it by these bridges, they are flanked by small batteries, which could in an instant destroy and throw them into the ditch. Behind these walls are two hexangular forts elevated above them and the city, and commanding all the adjacent fortifications and the glacis towards Floriana.

At the very extremity of the peninsula is Fort St. Elmo, a very large and strong castle, having a light house on top and in the centre. This fort is separated by a ditch from the city, and commands the entrance of both the small and great harbour. Overlooking the former harbour are two windmills, which in case of a siege would enable the garrison, provided they had corn, to have a supply of fresh flour; and overlooking the latter harbour is an uncovered building, formed of massive stone arches, having several tombs of distinguished individuals within it, and a garden outside, next the city. This building is called the Barratus, and was erected by the knights. It is a pleasant promenade; and from its balconies the whole of the great harbour, and the towns opposite, may be seen.

Valetta is 3200 yards long, and 1200 wide. It is laid off with great regularity; having its principal streets running parallel with respect to each other and to the peninsula; and having these intersected by the cross ones at right angles. All of them are of medium width, paved with pebbles and stone flags, and well cleaned. The cross streets, on the sides of the peninsula, from its being so high and precipitous, are so many stairs; being paved with flags, forming regular steps to the summit.

The houses are rarely under three stories high; they are flat roofed, built of the stone already mentioned, spacious, with and without courts, and have cisterns beneath them for holding the rain water caught from the roofs. These cisterns are kept free of animalculæ by putting into them either lime, or eels, which are preferable, as they feed on them, and do not affect the taste of the water. Lime, making it hard, renders it less agreeable to the palate, and not so well suited for washing as when it is sweet. The price of labour being very low, the materials easily worked and very cheap, house-rent is exceedingly moderate, it being possible to rent a palace for the same price as is paid in our cities for an ordinary dwelling.

The chief public edifices are the cathedral, the palaces built by the knights of the different European nations, the university, the

palace of the grand master—now that of the Governor of the island—and the hospitals.

The cathedral or church of St. John occupies a square. It consists of a main building and two wings, and has two steeples in front filled with bells of great size. Externally it is rather an ugly building, but in its interior is very handsome and elegant; its floor being completely paved with mosaic of the most costly marble; its ceiling, which is formed by a single arch, being decorated by fine *frescos*, the work of Matteo Preti, called Calabrese, and representing the history of St. John; and its chapels being ornamented with the mausoleums of some of the most distinguished knights, as Nicholas Cottoner, Gregory Carafa of Arragon, Antonio Zandadario, and Emanuel Pinto. These mausoleums are of bronze and variegated marble, and superbly executed. The chief altar or chapel has at the back of it a *bas relief* statue of Saint John, representing him in the act of baptizing our Saviour, by pouring water upon his head from a shell, while they are standing in the Jordan. This scene is made in white marble, and is a splendid piece of sculpture.

Beneath the floor are vaults, and a room in which are the *sarcophagi* of Valetta and three other renowned knights. Each *sarcophagus* rests upon two lions, and has the statue of the deceased clothed in armour sculptured on its lid.

The largest and finest palace of the knights is that of the Spanish, called the Auberg of Castile, and now used as a barracks by the officers of the garrison. Its front is richly ornamented with coats of arms, pilasters, and cornices.

The governor's palace forms a large square, and contains, besides tapestry, frescos, oil paintings, and other ornaments, an armoury in which are three hundred suits of ancient armour—some of which are on wooden figures—and ten thousand stand of arms for the use of the garrison. Among the paintings, the best are the full length portraits of Louis the Sixteenth, George the Fourth, and Catharine the Second, of Russia.

Of the university, I will remark that it is a commodious and handsome building, and was founded by the Grand Master Pinto. Its schools are well organized, and in them degrees are conferred for medicine, surgery, natural philosophy, chemistry, botany, theology, canon law, ethics, metaphysics, rhetoric, painting, drawing, navigation, and various dead and living languages. Before a medical student is allowed to graduate, he is required to attend lectures on professional, and the collateral branches for four years. Their Theses are written in Latin, and they are examined in Italian. No person is permitted to practice medicine or surgery, nor any apothecary to vend medicines without a certificate from government, obtained by application through a committee of physicians composed of five members. One of these is the police, and another, the quarantine physician. Quacks, therefore, are entirely excluded from Malta; but their medicines, nevertheless, are sold in moderate quantities. Morrison's pills, for instance, have found their way there, and are vended by the apothecaries. This sale

being allowed, the law against quacks is rendered partially nugatory. Speaking of physicians, it may be well to state that their fees are very moderate, only about thirty cents being paid for a visit from a native practitioner; but those of the English physicians are much higher.

Hospitals.—These are not confined to the limits of the city altogether; there is a Foundling Hospital at Floriana, and also what is called the *Casa Santa,* which can accommodate sixty patients; and at Fort Ricasoli, is one large enough for a hundred of them. At this fort, likewise, is a convalescent depôt for troops from Corfu and other parts. The Naval Hospital, as stated, is on one of the peninsulas opposite the city. The hospitals within the city are the Civil, which consists of two distinct parts, one for males, the other for females; and the General Military Hospital, appropriated exclusively to the use of the sick belonging to the garrison.

The Civil Hospital, before the French took possession of Malta, was the Magdalen Convent, or that of *Le Convertite;* and the Civil Hospital, was then what is now the Military. The male department of the former with a front of 200 feet, has two wings extending back 100 feet, united by a wall, so as to form a court; it is two stories high, flat roofed, and divided into medical and surgical wards, dispensaries, store-rooms, and other apartments. In the court is the dead house, where dissections and *post-mortem* examinations take place. Two of the best wards are, one in the second story occupying its whole side, and that which was formerly the church, and is on the other side of the house. The latter ward is of an oval shape, has a vaulted ceiling, and a chapel or altar at one end, on which are hung small silver arms, legs, &c., the offerings of the patients who have had those parts diseased, and having got well have thus fulfilled their vows. This ward is of the height of the building.

The kitchen is kept, as other parts, in good order, and very cleanly. The fire places are elevated several feet above the floor, and form a kind of tables, the tops of which are subdivided into a number of smaller fire places, for cooking with charcoal, of which a very small quantity is quite sufficient to cook whatever is placed over them; for radiating its heat immediately against the bottoms of the vessels this acts with great force and rapidity. This mode of making fire places is common in all the south of Europe; and it has several advantages over that adopted in the United States; they enable the cooks to attend to their business without stooping, require much less fuel, consuming only what is absolutely necessary, and save the cooks from exposure to that excessive heat from which they suffer so much before a large fire.

The medical wards were attended by Dr. Speranzo, the surgical by Dr. Partelli; both of whom are eminent in their profession. They have several assistants, and visit their patients at seven o'clock in the morning and at two o'clock in the afternoon.

Of the manner in which the wards are furnished it is unnecessary to speak minutely; and I will merely state that they contain

all requisite conveniences. This hospital was founded by the Knights of Saint John, who attended it in rotation, and are said to have served food to the sick in vessels of silver. All male applicants are admitted for treatment, but those who are able to pay are charged reasonably. The general expenses of this as well as of the female department are defrayed by government. The latter department, or the female hospital, is of similar construction to the former, but is not so large. It stands on the opposite side of the street between the male hospital and the great harbour; and has an uncommonly handsome exterior, the architecture and workmanship being of superior style; but its interior is much the same as that of the other hospital. The surgical wards were attended by Dr. Bardou, the medical by Dr. Speranzo.

For venereal patients there is a separate ward, to which all women of the town, when they are found diseased, are sent by the police physicians, who examine them every fifteen days to ascertain their condition; an excellent regulation, as it keeps a constant check on the diseases with which they are affected, and prevents their diffusion. This hospital is called La Casetta, was founded in 1664, by Catharine Scoppi of Siena; is superintended by a matron; and governed by the same managers as those of the male hospital.

Military Hospital.—This is situated near to the civil hospitals, and on Strada Mercanti, the street on which they stand. This hospital consists of an old and of a new part; but the latter is now unoccupied by the sick, the former being large enough for them, and is rented as a store house, for which it is well suited, being close to the great harbour, and having a length of more than six-hundred feet. The old part is not as long, but is quite equal in its general dimensions, being higher and wider. It has two courts; each of which is about one hundred feet square, and a terraced roof upon which the patients are allowed to take exercise.

This hospital was divided between the invalids belonging to three regiments, the fifth, seventieth, and ninety second Highland regiment. The medical officers were the surgeons and their assistants, of whom there was one of each grade to a regiment. The surgeon of the fifth was Dr. Henderson; that of the seventieth, Dr. Foster; and that of the ninety second, Dr. Palmer. Each of these officers had the entire control of the patients belonging to his own regiment, and they were kept as distinct as if they were in separate houses. As at the military hospital of Gibraltar, provisions were furnished by contract; ten pence instead of nine pence a day being allowed for the subsistence of each patient; probably because provisions were dearer at Malta. All the patients were dressed like those at Gibraltar.

The wards and other parts were under the immediate charge of three serjeants and six orderlies; there being one of the former and two of the latter for the patients of each regiment. The serjeants took care of the clothing, and had the superintendence; the orderlies attended to cleaning the house, and waited upon the sick. Finally, the best order and greatest cleanliness prevailed throughout the establish-

ment, and as much silence and decorum were maintained as in a well regulated private dwelling.

Naval Hospital.—This building,* as has been stated, stands upon one of the promontories on the southern side of the great harbour; and, having an elevation of about sixty feet above it, commands an extensive prospect of the sea and island. It is composed of a main building and two wings, which extend backwards, and form with it three sides of a square. The whole house is built of the same stone as that used for making the buildings of Valetta; and all parts of it are finished in the chastest style, both the architects and mechanics having performed their work in the best manner.

The main building is three stories high, about a hundred feet square, has an elegant stone balustrade around its terrace, a receding portico of four large doric columns in front of its second story; and contains the chapel, and the apartments which are occupied by the dispenser and his family.

The wings are precisely alike, and the description of one may answer for both. Each is two stories high, about one hundred feet in front, runs back about one hundred and fifty feet, and has four receding porticos of the doric order. Each of the front and back porticos is formed of eight columns, and each of the side ones of fourteen.

In the eastern wing are a kitchen, weighing room, the wardrobes, baths, and several store-rooms, all of which were perfect patterns of neatness and good management, and particularly the wardrobes. The latter consisted of several small rooms, containing all the clothing belonging to the hospital; as sheets, blankets, coverlets, mattresses, towels, &c., which were under the charge of a woman, and kept in such order that it is well worthy the attention of any visiter to look at them, although they may seem to be objects not meriting notice. As an example of the nicety observed, I will state that the mattresses have covers of white linen made like pillow-cases, so that whenever they become soiled they can be easily removed and replaced by others.

This is certainly a preferable method to either making the patients lie on dirty mattresses, or having these repeatedly taken to pieces to be cleaned.

In one of the wardrobes are contained all the uniforms and other clothing brought by the sick. In this apartment are a number of racks, made of slats, and divided into boxes of large size, and marked with the letters of the alphabet. In these boxes the clothes, having been carefully bundled up and marked with the names of their owners, are placed; each bundle being put in the box, on which is the first letter of the family name of the owner. In this manner not the least confusion occurs; and when a person is about leaving the house, he has his clothes restored without any difficulty. The wards, the dispensary, and the apartments for the

* See Plate VIII.

officers, both the warrant and commissioned, are in the second story, and corresponded in neatness and order with the apartments of the first story. The wards are three in number; one is of moderate size, and two are large.

The patients were all dressed as at the Military Hospital, but in a more complete manner, having entire suits of white flannel.

A table is set in one of the wards for those who are strong enough to go to it; and it was really gratifying to see how well it was furnished, having every thing on it which could add to the comfort of the patients, and presenting as much nicety as it is desirable to find at the table of any private gentleman. As regards the food, it was regulated in a similar manner to that of the Military Hospital at Gibraltar, and therefore it is not necessary for me to say more on the subject.

To finish my description of the hospital itself, I will state, that it has a guard of soldiers at the gate, it is supplied with water from cisterns filled with that collected by the terraces when it rains, and has at its back, between its wings, a beautiful garden, which even in winter is filled with flowers, and affords a charming promenade for convalescents, and other patients who are able to go out of doors.

The officers attached to the hospital consist of the surgeon and his assistant, and of the dispensing apothecary. The assistant-surgeon resides in the house, and has his apartments in the western wing; but the surgeon, Dr. Liddell, occupies a handsome dwelling situated just without the enclosure, and on the eastern side of the promontory towards Fort Recasoli.

This gentleman has had for a number of years the complete control of the establishment; nor could any one be better fitted for this office. His services in the navy, his eminent abilities, and professional attainments, entitled him to the appointment, which he has held undisturbed. The government has thus rewarded merit at the same time that it has consulted its own interests and the welfare of all the persons connected with the hospital, either in the way of business or on account of sickness.

This plan of making a judicious selection of a surgeon for a hospital, of which he must as a matter of course be considered to know at least as much as any person not belonging to the profession, and then allowing him to do whatever he may think necessary for its prosperity, is assuredly good policy: and much better than that of giving the management of it to persons ignorant of what it requires, and who not belonging to the profession cannot take the same interest in the welfare of the institution as the surgeon, whose pride, ambition, and reputation, are concerned.

I here conclude what I have to say concerning Malta, and will next speak of another island of no less importance in the eyes of some.

CORFU.

Of all the islands celebrated by the poets and historians of Greece, no one so exactly corresponds with the descriptions given by them as this does, and no one of them so completely equals our expectations. Its size, beauty, convenient location for commerce, its harbours, and great fertility, render it the most important of the Ionian Islands. It is thirty-seven miles long, and varies in breadth from two to seventeen; being of the former width at its southern, and of the latter at its northern extremity. It has a chain of mountains extending through it from south to north, which, when they have nearly reached Cape Drasti, strike off to the eastward towards the coast of Albania. The two highest points are Mounts Santa Decca, and St. Salvador, or Pantokrator. The first one is 2000, and the second 3000 feet in height.

On the western side the scenery is not so handsome, nor is the land so rich as it is on the eastern side; for there, from the mountains to the coast, it is as fertile as possible, being covered over with olive groves, vineyards, orange, lemon, plum, peach, apricot, pear, apple, pomegranate, and other trees; interspersed with wheat fields, and gardens, which latter produce an abundance of the finest vegetables.

The description given by Homer of the garden of Alcinous is applicable to the whole of the eastern part, and it is really astonishing how accurately he has sketched the productions of the island in the following lines:—

"Tall thriving trees confess'd the fruitful mould;
The red'ning apple ripens here to gold.
Here the blue fig with luscious juice o'erflows,
With deeper red the full pomegranate glows;
The branch here bends beneath the weighty pear,
And verdant olives flourish round the year.
The balmy spirit of the western gale,
Eternal breathes on fruits untaught to fail:
Each dropping pear a following pear supplies;
On apples, apples; figs on figs arise:
The same mild season gives the blooms to blow,
The buds to harden and the fruits to grow.
Here order'd vines in equal ranks appear,
With all the united labours of the year;
Some to unload the fertile branches run,
Some dry the black'ning clusters in the sun,
Others to tread the liquid harvest join,
The groaning presses foam with floods of wine,
Here are the vines in early flower descry'd,
Here grapes discolour'd on the sunny side,
And there in autumn's richest purple dy'd.
Beds of all various herbs, for ever green,
In beauteous order terminate the scene."

Odyssey, Book VII.

Olive oil is the principal product; 800,000 jars being made annually.

The *balania* or *valania*, the acorn of the *quercus ægilops*, and a valuable dyestuff, is very plentiful. Wheat, barley, oats, and flax, are also raised. The cyprus, palm, myrtle, rosemary, *agnus castus*, *cactus indicus*, *hyosciamus*, *colchicum*, *momordica elaterium*, *ricinus communis*, *smilax aspera*, and *scilla maritima*, are likewise to be numbered among the vegetable productions. Moreover, honey, wax, currants, and cotton, are made in abundance for foreign and domestic use.

Animals.—There are very few except the domestic ones. From some cause dogs are scarce, but I am inclined to believe that this is not owing to the climate so much as to neglect. However, Dr. Hennen, who lived on the island for some time, and has written a minute account of it, in his Topography of the Ionian Isles, states positively that they do not live, and seems to ascribe it altogether to the climate. Whether this, or something else, may be the cause of these animals not thriving, and rather tending to decrease than increase, I will not undertake to say; but it is certainly very singular that they require there such care in their breeding, and whilst in all other countries they increase so rapidly, though neglected, that it is necessary to drown their young, or to destroy them when they become grown. Only few cattle are raised, and the greater part of those slaughtered are brought from the coast of Albania. The latter, after being stall-fed for a while, yield beef of excellent quality.

Birds of prey are scarce, but there are a plenty of others, as of storks, herons, ducks, partridges, woodcocks, pigeons, &c.

Of fish there is a great variety, and vast quantities are caught and sold for home consumption, and for exportation after being salted, which can be done at little expense, as salt is manufactured in the island on an extensive scale. Among the best fish are the whiting, mullet, plaice, sole, perch, and mackerel; and of the ordinary, are the bonito, dolphin, pilot fish, cuttle fish, johndory, crab, and craw fish.

The fisheries are along the coast of the island and that of Albania, and especially in the bay of Bucintro. Besides the fish themselves, the roes are cured and exported. These constitute the botargo, a delicious relish, made by salting, oiling, and smoking, and then compressing the roes together into a solid mass.

Town of Corfu.—This is situated on the eastern side of the island, and upon a peninsula, projecting into the bay, and having a harbour on both its northern and southern side. This is the modern town, or that built by the Venitians, and is about a mile to the north of the peninsula on which stood the ancient Corcyra. Corfu contains about 8000 inhabitants within its walls; but including those of the adjacent villages, Saint Roque, Potamo, Castrades, and Manduchio, about 15,000; which is nearly the fourth of the

whole population of the island; it being estimated that this amounts to 62,000. This town is exceedingly well fortified, having high, thick, stone walls on the land side, and rendered impregnable by deep and broad moats. Overlooking the walls is the inaccessible Castle of Neuf rising a hundred feet above the town; and to the east of this, on the extremity of the peninsula, is the citadel, which is separated from the town by a moat of immense depth, and connecting the waters of the two harbours. The citadel has at each end a conical rock, rising from 120 to 150 feet above the level of the water. On the eastern one is a battery; on the western a telegraph and light-house; and between the two, on a level, is the Military Hospital, a large, neat, and commodious building, recently erected. Below the hospital, next to the northern harbour are the barracks, which are large enough for 1200 men. Opposite the barracks is the anchorage for large vessels; and a little further out is the small island of Vido, on which a very strong and extensive fort has been lately built to defend the northern harbour.

The citadel is connected with the town by a drawbridge; and from its two rocks it commands a prospect of the island, Albania, the bay and straits, almost unrivalled for beauty and magnificence. Between the moat and town is the esplanade, or Square of St. Antonio. It is near a half mile round, surrounded by acacias, which form a charming shade; it has the palace of the governor at its northern extremity, and, on one side, a fine statue of Schullomberg, the Venetian commander who defended the place against the Turks in 1716. This square is the parade ground.

Of the town itself little need be said, it being so small and containing no objects worthy of special notice. It has a Civil, Foundling, and Magdalen Hospital, which do not deserve description; and I will, therefore, pass on to the climate and diseases of the island.

Of the former I cannot speak from personal observation, not having had time during the two short visits paid the island to make any accurate observations regarding it; but according to Dr. Hennen and others it is an unhealthy one, in its being hot, damp, and variable. Its proximity to the lofty mountains of Albania, which are until a late period in the spring covered with snow, must materially influence the climate, and subject it, when the wind blows from the eastward, to sudden and great changes. Of diseases I will say as little as of the climate. Those decidedly prevalent, and to be considered the most common, are remittent and intermittent fevers; which have most fruitful sources in the malaria of the fens, low grounds, and ponds of water at the back of the town and near the site of the ancient city. The remittents prevail in summer, intermittents in autumn, both among the natives and the foreigners, the most of whom are the English troops, who, perhaps, are more affected from exposure while on guard at night, and from their being employed, when not on duty, in the construction of

roads. Judging from the account given me by a soldier, the fatigue alone is sufficient to exhaust the system, and predispose it to these diseases on the slightest exposure to an exciting cause; for he stated that he had, as others, to labour on the roads one day, and to stand guard the next. He complained most bitterly of the hardship of such duty; and by his thin form, sunken countenance, sallow and sun-burnt complexion, gave strong evidence of the truth of his assertions, and of his not being inclined to exaggerate his sufferings. If this routine of duty has been constantly maintained, we can no longer be surprised that so many of the soldiers are afflicted with these fevers, and that it is necessary to send the sick to convalesce at Malta. Such hard and incessant labour even in a cool and healthy country would be quite enough to wear out any body of troops; but in one where the thermometer rarely descends to 44°, and sometimes rises as high as 90°, and where the air is for a great part of the year overcharged with malaria, they must not only be exhausted, but also rendered sickly and ineffective. It is rather strange, that when the causes of sickness among them are so apparent, that a change is not made in their tasks and duties, and other prophylactic measures adopted to secure them from disease, and preserve them in their efficiency. The loss of 2000 French soldiers in the excavation of a small and short canal, a small distance in the interior, should have been sufficient evidence of the insalubrity of the country, and served as a warning to the English commanders to keep their soldiers within the walls, and not to expose them unnecessarily to the pestiferous atmosphere of the country, nor to make them more susceptible to disease, by requiring them to perform the duties of soldiers and the tasks of day labourers.

ARCHIPELAGO.

ALTHOUGH the islands forming this group generally present a barren appearance, yet some of them are very productive, and taken altogether they are unrivalled in richness and variety of scenery. Setting aside the delightful associations in the mind to which their history gives rise, they must still continue to please, presenting as they do everything which can gratify the sight. Their rocky, peaked mountains, deep ravines, fertile valleys, and terraced hills, covered with cottages, villages, and fruit trees, form the most enchanting prospects.

These islands are too numerous to be described separately or minutely, and therefore, with the exception of a few of them, they will be spoken of in a general manner. Most of them have a volcanic aspect, especially the smaller ones, their bases being of primitive or secondary limestone, with some granite, tufa, and other stone. The soil upon the hills and sides of the mountains, consists of red and yellow clay, intermixed with more or less sand and gravel. Limestone being so abundant, lime of course forms a very important part of its substance, rendering it well suited for the production of wheat, barley, and other things which require a warm and dry soil. Their chief products are these articles, and cotton, oranges, lemons, legumes, grapes, figs, silk, currants, mastic, wax, honey, salt, and cheese.

Besides the trees producing the fruits mentioned, are the myrtle, the *quercus ægilops*, the mulberry, oleander, and others; but none of them form forests, except the olive and mulberry, and these are artificial. Medicinal plants are rare.

Of animals, most are met with which are seen in other parts of the Mediterranean. Hogs, sheep, goats, dogs, asses, and mules, are the principal domestic ones; cattle and horses are scarce, particularly on the smaller islands, where there is no pasturage, and little herbage on which they could subsist. It sometimes happens that the goats run wild, and an abundance of these are found on Anti-Milo, where they are hunted and killed for food by the inhabitants of Milo. The former island being a lofty, precipitous rock, the goats there continue to live and increase, it not being possible, were it desired, to exterminate them, from the great difficulty with which they are reached. Fleeing from point to point, from precipice to precipice, much skill in shooting, and great agility are requisite in the huntsmen. One of these goats, which I saw offered for sale,

had been caught by wounding him in the spine. He was uncommonly large, and had horns of immense length and thickness, rising nearly vertically from the head. In other respects he was like the ordinary goats of the islands. Except these, wild animals of any kind are very scarce, and those of the carnivorous order may be said to be almost entirely wanting.

Of birds, there are a plenty of the common domestic species, and also of the wild, as the gull, partridge, owl, hawk, &c., but none which are peculiar to these islands. Fish may exist in great abundance, but it is difficult to find or catch them in any way, in consequence of the vast depth of the water and the great abruptness of the shores; and therefore they cannot be said to be plentiful. They are certainly not so in the markets, and what are caught are only sufficient for home consumption. Those I saw are the same of which I have spoken of as belonging to places already described, and to avoid repetition I will not enumerate them.

Climate.—During winter this is variable, the temperature being sometimes warm, and at other times unpleasantly cold; snow occasionally falling and covering the tops of the mountains and the highest hills. At this season, likewise, violent squalls and storms are frequent, and exceedingly dangerous to vessels at sea, from the great difficulty in navigating them through the countless rocks and islands. The danger is much enhanced at night, and by the sudden changes occurring in doubling and passing the high promontories. The currents also increase the danger, rendering it impossible for a ship to calculate precisely her position or the distance she sails within a given time. The chief current is that alluded to as being formed by the water coming out of the Dardanelles. In consequence of these difficulties in navigation shipwrecks are common. One of the most important which of late years has taken place was that of a French ship of the line, which, during a dark and stormy night, ran ashore on one of the Cyclades, and was totally lost. The same fate, it is stated, would have befallen one of our frigates had she not most luckily made the passage between Andros and Tinos, and succeeded in getting through notwithstanding its narrowness. In September, 1831, during a similar storm from the northward, the John Adams was forced to run through the passage between Tinos and Myconi, and likewise by night. This storm was accompanied with a heavy fall of rain, and was so violent that it caused the decks to leak in such a manner as to oblige her to put into the harbour of Milo to caulk them.

During summer rain scarcely ever falls, the atmosphere is uniformly cloudless—storms are very unusual; but the wind, although it is variable, often blows strongly from the north-east. However, a difference exists between the winds blowing through the central islands and those which blow over the others near the coasts of Greece and Asia Minor; for, in the latter parts, the wind dies away in

the evening; early in the morning it blows from land; and during the day from the sea. The most constant wind in summer is the north-east, which constitutes, as mentioned, one of the Etesian winds. At this time, also, the south-east, or the sirocco, and the south-west wind blow occasionally. As regards the temperature during this season, at noon, it may be said to average 80°, though in the summer of 1833 it exceeded that considerably, it averaging for fifteen days in July rather more than 83°, and for twenty-six days in August exactly 84°.

Diseases.—Of these I have little to say, not having been able to pursue my inquiries as far as was necessary to become extensively acquainted with them. They are not numerous; the simplicity of life among the inhabitants, their frugality and temperance, the salubrity of the climate, and the rockiness and elevation of the islands, all being calculated to decrease their number. Pulmonary complaints, hepatic and febrile affections, are the most general of them. Plague, although these islands are so near Turkey, seldom occurs, and when it does, according to accounts, is always imported from that country. Since Otho has become King of Greece, the islands belonging to it have been protected by quarantine from the incursions of this disease, and now it is never known to prevail extensively in any of them; it being confined to the lazarettos.

Inhabitants.—Since the revolution they have been gradually increasing in number and prosperity. Being now in the enjoyment of profound peace, they are rapidly improving in civilization; are throwing aside their ancient habits and customs, changing their odd and old fashioned costumes for those of Europe; and spending their time in commerce and agriculture, instead of piracy and bloodshed.

Hydra and Syra are the two most commercial islands. The trade of the former is so great that, although an almost naked rock, it supports a population of 30,000, and employs three hundred vessels, many of which are of large size. The most common of them are brigs, having masts without tops; and latine vessels, or feluccas, similar to those met with in the western part of the Mediterranean, except that their bows are more elevated, and resemble those of the ancient galleys. These vessels are used throughout the Archipelago. Every person aboard them has a share in the profits or losses; no one receives wages. The principal owners are the masters and the capitalists, who are old resident masters, and who lend money at a very large interest, sometimes as high as twenty per cent. This mode of trading is certainly attended with less commercial risk than that of other countries, every man being directly interested in the success of an adventure; but it has been frequently the cause of piracies having been committed; for these vessels, in case of making an unprofitable voyage, are apt to supply all deficiences from the cargoes of one another, or from those of other nations.

Wheat is the chief article of commerce, and is imported from Greece, Turkey, Syria, and Egypt, for exportation to France, and other parts in the west of Europe. Immense quantities are carried to Marseilles. That retained by the islanders is manufactured into flour, which is ground principally in windmills, there being a want of water power in all the islands: it is made of good quality with respect to sweetness, but in whiteness and fineness is inferior to that of this country.

The town of Hydra stands upon a lofty hill on the northern side of the island, facing the main land, its harbour formed between them, being open to the east and west: and having all its houses white-washed and plastered its appearance is very neat.

To the Hydriots, Greece mainly owes her freedom from the tyrannous sway of Turkey. They are brave, active, enterprising, patriotic, and excellent sailors. After the acquisition of wealth they return home to enjoy it, and seldom marry foreigners, preferring their own country women to those of every other place. They are not distinguished, however, for humanity; but on the contrary, they are warlike, rebellious, and blood-thirsty.

The revolt which occurred among them a year ago, was caused by an old woman whose son was about being recruited into the service of King Otho against her approbation. Her distress and clamours created so much sympathy, that the populace delivered her son from the hands of the soldiers, took up arms, forced the governor to save himself by taking to flight in a boat, and remained in a state of rebellion until a large force had arrived from the continent.

Syra being near the centre of the Archipelago, and having a secure harbour, is, notwithstanding its barrenness, the emporium, and possesses even more commerce than Hydra; all the products of the islands and adjacent regions being collected there for sale or barter. From an insignificant town, its capital, since the revolution began, has become a city containing about 20,000 inhabitants; consisting of Greeks, French, English, Italians, and other people of Europe, who have settled there for commercial pursuits, and established consulates. The city is divided into two parts; the old and new, or the upper and lower. The former covers the top of a conical hill, the latter its sides and the plain between it and the harbour.

Society in Syra is much better than in any of the islands; the manners of the people being more polished, and education superior, from the missionaries having established a press, and schools for the instruction of the young of both sexes.

This island, in comparison with others, is well furnished with physicians there being three of them, who received their education in Italy. They have all the practice among the citizens of first respectability. Vaccination is employed by them, but not with success, I should judge, from the impurity of the matter used; the wife of one of the American missionaries having told me that one

of her children had caught the small-pox, by being inoculated instead of vaccinated, as was intended.

Tinos is a fertile, thickly populated, and less rocky island than most of the others. It is cultivated from the water's edge to the summit; and the walls extending transversely across the hills and mountains to form the terraces, and prevent the washing away of the soil, have the appearance of steps of prodigious height and length. It contains 65,000 inhabitants, who are distributed in sixty-five villages, scattered over its sides, and in its capital, Saint Nicholas; a town of large size, well laid off, with a handsome church, and built on a plain opposite Myconi. Tinos produces grain, silk, and mastic, in great abundance. The two last articles are the principal ones of exportation, and afford a considerable revenue. The inhabitants are famed for industry, and manufacture a large quantity of raw silk for foreign markets and their own use.

Formerly the poorer class sent their daughters in great numbers to Turkey and other countries to be employed as servants. After having served for some years they returned home with their wages, and married.

To the south of Tinos, at the distance of about six miles, are the Delian Isles, which though uncultivated and uninhabited are, on account of their celebrity and antiquities, highly interesting. They consist of the greater Delos, called Rhenia or Lavato; the smaller Delos; and the two small islands of Rhamatiari, lying in the channel between them.

On Rhenia are the ruins of a town, and a vast quantity of marble; the remains of palaces and temples, which once adorned it, but now hardly have one stone resting upon another. Their splendidly festooned altars* are seen upset, strewed along the shores, exposing their admirably sculptured ornaments to the corroding influence of the air and weather. Within the distance of a few hundred yards I saw six of these altars, of the purest white marble, and executed in the best style, thus exposed.

On Delos proper, or the smaller, the antiquities are much more numerous and extensive; its central portion being completely covered with the ruins of the city, and those of the magnificent temples of Diana, Apollo, and Latona. Their elegantly sculptured columns, architraves, and cornices, are scattered in confused heaps from the summit of Mount Cynthus to the harbour. In the midst of the ruins of the temple of Apollo, which stood nearest the water, are seen the miserable fragments of the great statue of the god himself, which was presented by the people of Naxos. This gigantic statue is six feet across the shoulders, and must have been at least twenty-four feet high. Nothing but its size has prevented it from being carried off to be shown as a curiosity. The only remains of this statue are the upper part of the body, and the pelvis with a

* These altars are encircled by bas relief festoons of flowers, having head of sheep intervening.

portion of the thighs. The former composes one fragment, the latter another. No traces of the head, arms, and legs are to be seen; and it is altogether so mutilated that by a superficial observer it might be passed unnoticed. At the back of the temple is the dry bed of an artificial lake, in which sea fights were represented. It is seventy-two paces wide, one hundred and two long, of an elliptical form, and encompassed by a low, dilapidated stone wall. Near this lake is the gymnasium, which was built of granite, and has six columns yet standing.

At the foot of Mount Cynthus is the theatre, which is more perfect than any other edifice. It is semicircular, has seats of granite and walls of white marble, and is large enough to accommodate several thousand spectators, even in its present ruinous state. To the north of Cynthus, in a plain, is the race-course, or stadium, marked at one end by a low column of marble, like the pedestal of a statue or an altar, on which is a long Greek inscription, almost defaced and illegible.

Cynthus itself is a conical hill, rising abruptly in the centre of the island. It is composed of huge masses of granite; and being very high commands an extensive and magnificent prospect of the adjacent islands, which, from appearing to form a circle around it, have been named Cyclades. There are three zigzag roads cut through the rock from the base to the summit of the mountain. Over one of them, half way up, is an arch of immense blocks of granite resting against each other at top, like the rafters of a house. At the foot of the mountain, near the theatre, is a spring of pure, sweet, and cold water, obscured from view by surrounding rocks; and towards the northern extremity of the island, near the top of a bare hemispherical hill, is the celebrated fountain of Inopus, improperly called by some antiquarians a river, whose waters were said to rise and fall with those of the Nile. Others supposed it was this river coming from Egypt beneath the sea. The fountain is situated in a hollow, about three hundred feet in diameter, and encompassed by a stone fence a foot or two high. The water gushes forth from a small hollow in the centre of the large one, and surrounded by another wall, partly artificial partly natural. This fountain, having no outlet for its water, during the winter, when it rains, evaporation is less, and its sources being more abundantly supplied, it overflows and fills both hollows. From this circumstance, which is not at all wonderful or unaccountable, has arisen the fable mentioned. Some writers state that Apollo and Diana were born near the fountain; others that they were born on Cynthus. Who are correct I will not undertake to say, but content myself with merely remarking that if Latona was delivered at the fountain she was very much exposed to the weather, and if on the mountain she must have found the rocks to form a bed most uncomfortably hard and rough.

No minerals were found, and the only metallic substances were antique copper coins.

Except grass, weeds, and bushes, vegetable productions were

equally scarce. No trees nor medicinal plants were seen. The only animals met with were lizards; a large yellow spotted snake, like the mockeson, which was concealed between two rocks, and drew my attention by his hissing while I was lying upon one of them; a few birds, and a flock of sheep belonging to two shepherds who had brought them over from Myconi to graze. In fine, Delos is truly desolate, and has a most melancholy aspect; although the want of tombstones, mausoleums, and *catacombs, show that it is not the habitation of the dead, and was intended only for the living. It is so small, so unsusceptible of cultivation, that it is capable of supporting very few inhabitants; and we can only account for its having had in ancient times an immense population by the great concourse of people assembling there to worship having made it a place of considerable commerce. The phenomenon respecting the rise and fall of the Inopus may have first rendered it a place of resort; but it is probable, that the chief cause of this was the fable of the island being the birth place of Diana and Apollo, two favourite deities. The fable was, we may suppose, invented by the owners of the island for the purpose of increasing the value of property, as the superstition of the people was such, at that period, that they were ready to believe every thing wonderful regarding their gods and goddesses, and would flock with eagerness to the place where they were said to have been born and were worshipped.

There are only two other islands of which I shall speak; Milo and Scio. The first one is remakable for its harbour and the excellence of its pilots, who enjoy a monopoly in the navigation of all European and American vessels bound up the Dardanelles to the eastern coast of Greece, and Turkey in Europe, to the western coast of Turkey in Asia; or which intend cruising in the Archipelago. Milo is about sixty miles in circumference, and has a mountain at its north-western part of 2000 feet in height. This mountain is one of the best landmarks for ships, is known by its naked, peaked summit, and may be distinguished with ease in clear weather for fifty miles. Milo is evidently of volcanic origin, and its harbour appears to be an immense crater broken down on one side, and permitting the ingress of the sea. The productions are grain, cotton, and the fruits mentioned as being common to all the islands; but the female part of the population being employed in domestic concerns, and the men devoting themselves, almost exclusively, to piloting, none of these articles are raised in abundance. Pomegranates, which were of old so plentiful that they were emblematical of the island, and impressed on their coin, now are scarcely to be seen.

Medicinal plants are scarce, and there are no groves nor forests; but in the spring the fields are beautifully enamelled with daisies, red poppies resembling tulips, and many other wild flowers.

The most remarkable geological production is the earth-cimolite,

* No person was allowed to be buried on the island.

which is used by the inhabitants in place of soap. An abundance of this substance is to be obtained in the hills, near the harbour.

Population.—This is estimated at four or five thousand, the greater part of whom live in the town of Milo, or Clima; the only one on the island. This town is perched, like an eagle's nest, on the top of a conical mountain, rising about a thousand feet above the sea, on the eastern side of the harbour. The ruins of the ancient town are between this and the mountain, to which it is stated the inhabitants fled to escape the pestiferous atmosphere of the low grounds, especially of those at the head of the harbour, which are so productive of miasmata and fevers that they cannot be inhabited. The streets of Clima are mere allies, and wretchedly filthy; its houses are of stone, plastered and whitewashed, and have terraced roofs, like those of the other islands. It had no physicians, surgeons, nor apothecaries, when I was last there; and what it had of the former, previously, may be judged of by the account given me by a pilot, who said:—"that 'spose doctors no come, no sickness; 'spose they come, plenty of sickness." However, I know from the numerous demands for my services on part of the people, both aboard ship and when I was visiting the town, that this account is exaggerated. I was called upon not only for advice, but for medicine; particularly for quinine, of which little or none was to be had on the island.

The inhabitants subsist principally on olives, bread, fruits, vegetables, and fish, either fresh or salted. These are caught mostly, if not altogether, with the hook and line. The best fisheries are about the rocks in the sea. The ordinary mode, I understood, of catching them, was by throwing out a large line of several hundred feet in length, to which were attached a number of small lines, armed with the hooks. Olive oil also forms an essential item in their food, being eaten with bread, fish, and other articles. Flesh enters very little into their nourishment. That of goats and mutton is most used; beef, though they have cattle, is scarce, little eaten, and of poor quality, both as respects fatness and flavour.

The other common articles of diet are poultry, eggs, milk, and cheese, but none of these are very plentiful or more abundant than are necessary for the consumption of the inhabitants themselves.

The ordinary drinks are rain and spring water, and domestic wine, which is very weak, and unadulterated by the addition of distilled spirits. Alcohol indeed is rarely drunk in any other manner than as it exists naturally in wine, and the people are justly entitled to the reputation of being temperate. They are moreover frugal and industrious, and though not commercial, yet by their skill in piloting they prove of great service to the people who are, and trade in the parts mentioned.

The men are of middle stature, well made, have brown complexions, coal black hair and eyes, regular features and intelligent countenances: their forms are athletic; temperament bilious and

nervous. Obesity is extremely uncommon among them. The women are like them, and generally handsome, having fine glossy black hair; brilliant, large, and animated eyes; and fair complexions, from the use of veils and their seldom going without doors, or being exposed to the sun. In costume the men differ; some wearing the Greek, others the European; but the women retain the former, wearing head-dresses, white veils, muslin gowns made after a peculiar style, belts of great breadth in front and narrow behind; and morocco slippers. In disposition both sexes are mild and amiable; the constant association of the men with the most polished nations, having had decidedly a beneficial influence in removing the irrascibility and irritability belonging to the Greeks, and in rendering them civilized. In intelligence likewise they are superior to most of the other islanders; the men are particularly so as respects foreign languages, several of which they speak with fluency, probably from the absolute necessity of knowing them when they are employed in piloting; and the many advantages they have in learning them in the vessels aboard which they serve.

Of Scio I have not much to say, as my opportunities of becoming acquainted with it were limited. In size, beauty, and fertility, it is unsurpassed by any of the other islands. It is twenty-seven miles long, ten broad, and has a chain of ash grey, barren mountains extending from one end to the other; but has its hills, plains, and valleys cultivated in the best manner, and covered with the richest vegetation. Its southern end is a continuous wheat field, intersected only by terraces; and the eastern side is covered with groves of lemon, orange, fig, and olive trees, interspersed with houses and cottages. The town of Scio is on that side, and extends for four or five miles along the coast. The buildings being mostly separate, and surrounded by trees and shrubbery, present a most lovely prospect; but many of them are deserted and in ruins, having been burnt during the dreadful massacre of 1822, when thousands of their wretched inhabitants were butchered in cold blood by their merciless enemies, the Turks.

The climate is salubrious and delightful; but a great difference must necessarily exist between that of the plains and mountains, and between that of the northern and southern side. In winter the southern side being shielded from the northerly winds by the mountains is more agreeable than the other side, but in summer the reverse of this happens, for the northern side being then protected from the southerly winds is cooler and more pleasant. A similar difference exists between the climate of the eastern and western sides, for the former enjoys the south-easterly winds in winter, and the latter the sea breeze in the summer; but in the winter neither has much the advantage, for then one side is shielded from the north-westerly, the other from the north-easterly winds.

Productions—In all those of the soil this island equals, if it does not surpass the other islands; and lemons, oranges, figs, olives, grapes,

and grain, are most plentiful, and of the finest quality. Enough of these articles is made for domestic consumption, and also for supplying foreign markets. Silk likewise is made in large quantities, and is a most valuable article of exportation.

I might proceed, and speak at large of the many objects of interest about this charming island; might descant on its marbles, its lovely bay, that of the opposite coast of Asia, on which stands Chesme, where the Turkish was annihilated by the Russian fleet in 1770; and might describe the bashaw's fountains; Mount Epos, overhanging the town; and the school of Homer, a rock where that divine poet instructed the youth of Scio, which is one of the seven places claiming his birth; but I will here stop, after observing that this island seems to possess almost every charm, every attraction which can make life desirable and happy.

SMYRNA, AND THE ADJACENT PARTS.

Smyrna, the *Ismir* of the Turks, and the great emporium of Turkey in Asia, is situated at the head of a gulf bearing the same name, and which runs nearly from west to east. This city is built partly upon the side of a very lofty hill, meriting the name of a mountain; partly upon a plain extending five or six miles in an easterly direction to the foot of an elevated ridge of mountains, which bounds the gulf on the north and the east. Through this plain flows the Meles, a rapid and crystal stream, which tradition asserts was the favourite resort of the immortal Homer, to the honor of whose birth Smyrna lays claim. Having a rich alluvial soil, being covered at the back of the city with gardens in the highest state of cultivation, producing a vast quantity of vegetable matter, and being constantly in a state of great humidity from snow, rain, the Meles, and the water supplied by Persian wheels from the innumerable wells in the gardens, this plain is an inexhaustible store of miasmata, and may be very justly called unhealthy.

Towards the north-eastern part of the city, and where the Meles disembogues, there is almost a morass, and the land is so low that many of the houses are built upon piles; and wooden causeways are necessary for passing in wet weather from one part of the Frank quarter to the other.

Between the mountains overhanging the gulf on the north and its shore is a perfectly level plain, which is in part finely cultivated, and in part overflowed; and converted into pans for the manufacture of common-salt, immense pyramids of which, being always visible, may serve for landmarks to vessels navigating the gulf. The face of the country on the south and west side of the gulf corresponds with that on the east and north, in its having high mountains

overlooking alluvial and fertile plains. Ten or twelve miles below Smyrna, on the south side, is a mountain with two naked conical rocks at top, called the Two Brothers. At the foot of this mountain is the castle of Sandjack or Saint James, and opposite to this the narrows which it defends, and Cape Salines, an elongation of the plain on the north side. On the west side, running north and south, is a long, naked, lofty mountain, forming Cape Black or Karabouroun, and the southern side of the entrance to the gulf. This cape is also remarkable for a high conical rock near its end, called Mimras, and forming a most conspicuous landmark, always noticed in sailing directions. Ten miles to the south-east of the cape are the small town of Dourlack or Vourla, the islands bearing its former name; a watering-place for ships, supplied by a stream of cold, clear, and sweet water, brought by a small aqueduct from a mountain a mile or two back from the shore, and the ruins of the ancient city of Clazominæ, the birth-place of Anaxagoras. These ruins are upon the mainland, and upon a small island once united to it by a stone causeway now dilapidated. Some miles from Vourla is a sulphur spring, whose water is highly prized, and much drank by the inhabitants during the summer. To the north of this spring, near the castle of Saint James, and at the foot of the mountain, is a hot spring of great celebrity, but not much resorted to in consequence of the want of suitable accommodations to visiters. The sulphur spring, likewise, is but little resorted to, except by persons living near it, from the same cause. Were houses of a proper kind put up at these springs, and converted into hotels, there is no doubt that they would become places of great resort for health and pleasure to the citizens of Smyrna.

The gulf being completely enclosed by mountains, the climate is warm, and the evaporation from its surface is very great. The water evaporates during the day, rises into the upper region of the atmosphere, condenses into clouds, and obscures the mountains; or as night comes on descends in a mist and overshadows the city. If it be summer this mist becomes a heavy dew; and if it be winter, the clouds, after hanging for some time about the summits of the mountains, cover them with snow, or drench them and the plains with copious showers.

In winter there is so much rain, that some allege it has been known to fall for fifty successive days; but in this statement there is probably an exaggeration.

The climate of Smyrna in the summer and fall is hot and dry, in the winter damp and cold; but I have known during the summer heavy rains to occur accompanied with thunder and lightning, and during the winter great vicissitudes in the temperature of the air; the thermometer varying as much as 30° F. The temperature differs accordingly as the wind is from the north or the south. In winter, when it blows from the north-east, the weather is damp, piercingly cold, and frequently attended by falls of snow, which commonly take place on the mountains, but sometimes in the plains; and I

was informed by a citizen of Smyrna, that some years ago it fell to the depth of eighteen inches, and remained on the ground for three weeks. The coldness and dampness of this wind may be ascribed to its traversing the Black Sea and the Sea of Marmora, and then blowing over the lofty mountains of Olympus, which even in August are covered with snow, and finally sweeping across the mountains which border on the gulf to the north.

During the summer the inbat, or sea-breeze, comes in from the west regularly about 10 o'clock in the morning, and gradually increasing in force blows until 6 o'clock in the afternoon, then subsides, and is succeeded by a calm. When it blows strongly the tide rises from three to four feet. It is high water at Smyrna at 4 o'clock, P.M., but this depends upon the wind; the tide coming in sooner or later, and rising higher or lower according to the strength and direction of the former. In winter it blows very irregularly, and often either not at all or across or down the gulf; and, of course, when it blows in this direction the tide must be retarded and made much lower.

The sirocco blows sometimes in the fall, and also in the winter. During the former season this wind is dry, during the latter is accompanied with heavy showers. Clouds, like snow, collecting about the summit of Mount Karabouroun, are a sure sign of a change of the wind from the north-east to the south-east. To impart a more accurate knowledge of the temperature of the climate, I will give the annexed summary of it, taken from my registers. I would, however, first state, that, as at other places, the thermometer was kept aboard ship, and the temperature was ascertained at noon; that the ships were not at Smyrna during the whole of each month specified, and were sometimes at Vourla, or on their passage between the two places. Nevertheless, as they are in nearly the same latitude, and the course going up and coming down from one to the other is almost direct, I do not think any great difference in temperature exists between them, and therefore this summary may be regarded as correct.

		Average.	Maximum.	Minimum.	Medium.
1831.					
	July	84° 1/5	85	84	84½
	August	78°	78	78	78
	September	78° 2/3	84	71	77½
1833.					
	May	70° 11/19	75	70	72½
	June	78° 22/30	86	67	76½
	July	81° 12/15	84	80	82
	August	81° 2/3	84	82	83
	September	80°	82	78	80
1837.					
	January	52°	61	37	49
1838.					
	June	76° 3/4	79	72	75½

The above was the temperature at noon and aboard ship, but it

was higher in the afternoon, and lower at night, and therefore there was a greater difference between its maximum and minimum at those two periods of the 24 hours than existed between the maximum and minimum at noon. Moreover, in summer it was much cooler on the water and the marina, where the inbat was felt in full force, than it was in the interior of the city where it could not be felt, from the impediments offered by the houses, and the great crookedness and narrowness of the streets.

During the winter of 1835–36, the temperature was 12° below the freezing point, and to that was owing the general failure of the vintage, and of the crops of oranges and figs during the subsequent fall. The winter of 1832–33 was also severe, and followed by a similar disaster to the fruit; many of the orange trees in the neighbourhood of the city and near the mountains having been killed to the roots. During that winter all the orange trees in the garden of the American Consul's country seat at Bournabat, a favourite summer resort for the Frank population of Smyrna, were completely destroyed; so that instead of having a crop of ten thousand oranges, as was customary, he had none.

These facts are sufficient to prove that although the climate is temperate, yet it is not uniformly so, and that it is subject to vicissitudes as destructive to vegetation as they are detrimental to human life. However, in spite of the climate, the dryness of the summer, the coldness of winter,—such is the fertility of the country between the gulf and mountains and in the valleys, that the market is generally supplied abundantly with the most delicious fruits and vegetables found in the eastern portion of the Mediterranean. Besides the figs, which every one knows are esteemed the finest in the world, the grapes, cherries, pomegranates, and melons, are extremely good. Grapes of the best quality, even the royal sultanas, which are so famous for their delicacy and having no seeds, may be had for a cent a pound. The cherries are large, of various kinds and different colours, and also excellent; and as for the melons they are not to be excelled by any others. Indeed, the kind called *cassabar* for size and flavour is unequalled, and has the reputation of being the best in that or any other country. The olive tree grows to great perfection in the plains, and its fruit is of the finest quality; but from not being properly preserved it is not as much liked as the olives of France and Spain, and its oil from not being made with care is commonly of inferior quality,

The staple productions of the country are olives, figs, wheat, barley, cotton, flax, tobacco, and Indian corn, and a variety of drugs. The chief medicinal products are opium, scammony, the squirting cucumber, colocynth, and gallnut, but the two first articles are raised within the interior and at the back of the mountains, and the last named article is found most abundant towards the Hellespont and upon the plains of Troy, particularly around the tomb of Æsyetes, which stands on their most elevated part. Of ordinary botanical productions there is an endless variety on the low

grounds, but most of the mountains are either naked heaps of limestone, or are covered with bushes and dwarf trees. The mountains to the north of the gulf are entirely uncultivated, and almost barren; whilst those to the south of it display, both on their sides and summits, a fine growth of forest trees, many of which are of a large size, and are more pleasing to the sight from the like not being seen in any other part of the country, nor any where in the Mediterranean, excepting on the south side of Mount Ætna. The myrtle is a common tree, and is extremely odoriferous, and the oleander grows wild in the ravines and gullies; its beautiful red flowers blooming, withering, and falling off, unadmired and unnoticed.

Animals.—Besides the common domestic animals, the camel is much used, and in carrying burdens excludes the horse and mule, having, though perhaps not enjoying, quite a monopoly for the transportation of goods and all the products of the country. The bison is sometimes met with, and with the farmer takes the place of the ox. Of wild animals the most common are the hare, hyena, and wild boar. Great numbers of the former are found on Long Island, and the latter is met with on the mountains, where it is hunted down and shot to supply the market, at which it is always to be purchased in the winter. This is still a fierce and formidable beast, but by the use of fire-arms it is easily killed, and is no longer the terror of sportsmen. Probably it has degenerated in size and diminished in ferocity, or is a different animal from the wild boar of the ancients, and that which scarred the leg of the wise Ulysses. When killed, it is flayed, deprived of a portion of the exterior fat, and then carried to market. Its flesh is white, tender, sweet, and well flavoured.

Of birds I will merely remark, that woodcocks, red-legged partridges, pigeons, *beccaficos*, ducks, geese, fowls, and turkeys; and of fish, flounders, mullet, holybut, and a great many others, stock the market, and can be had at very low prices. Take it altogether, Smyrna affords the best provisions in the Mediterranean, and may be said to have by far the best market; possessing a greater variety of articles of food, and having them in greater abundance than any other city upon the borders of that sea.

Smyrna has few objects calculated to gratify the curiosity of the stranger and to excite much interest. The most conspicuous of them are the ruins of an extensive Genoese Castle, crowning the hill which overlooks the city; the mosques, with their slender and pointed minarets; the barracks at its west end, which are capaple of accommodating two thousand men; the houses of the Frank (Christian) consuls, extending along the marina at the east end, and displaying the flags of their different nations; and, finally, the groves of high, sharp topped, dark green, and gloomy cypress trees shading the vast cemeteries to the west and south of the city.

The only antiquities worthy of notice are the remains of the theatre, on the side of the hill, of the church of St. John, or of the first church in Asia; and the tomb of Tantalus, which stands upon an

eminence on the northern side of the head of the gulf. This tomb, though it cannot be proved to be that of the person whose name it bears, is certainly that of some very distinguished individual; being a mound thirty five paces in diameter, with a flat top, and composed chiefly of rough and hewn granite. The vault is in the centre; and is an arched chamber, fifteen feet long and six wide, but of uncertain height, being filled up by rubbish, which also blocking up the door at one end renders it necessary to enter through the ceiling by one of the two holes which were made at the time when the vault was first explored. The fact of this mound being a tomb was ascertained only a few years ago. Nothing being known concerning the period at which it was made, nor the person for whom it was built, proves it to be of great antiquity, and probably to have been made about the time of the Trojan war, when it was customary to inter heroes and other eminent men after this manner. It is true that the tombs of that period were mostly formed of earth, and of a conical form, and that this one is a truncated cone, and principally composed of stone, but nevertheless some of the tombs then were made of both earth and stone, as are those of Agamemnon, and other monarchs of Messene and Argos. Moreover the tomb of Tantalus, being so near Smyrna has probably been reduced to its present flattened form, by the removal of the earth from the top for the purpose of procuring stone for building; it being much easier to obtain it by doing this than by quarrying.

In Smyrna there are no places of public amusement; no operas, no theatres, no public squares nor walks save the marina, which is only about two hundred yards long, and from fifty to sixty feet broad. On festival days the inhabitants flock to the cemeteries, and to the caravan bridge, a small one over the Meles, and while sitting upon benches, and the stone fences, beneath the shade of the willows, sycamores, and cypresses, they sip coffee, and smoke their pipes until evening, with the additional amusement of listening to the melodious notes of the guitar and violins, played by musicians who are compensated by general contribution.

For the Franks, or Europeans, the chief place of resort and diversion is the Casino, a large and handsome edifice, built and owned by a Greek. In the second story are a billiard-room, two parlours, and a spacious hall used commonly for a reading-room and exchange, but in winter also used for the balls, which are given throughout that season by the subscribers to the establishment. Any subscriber has the liberty of introducing into it as many strangers as he thinks proper, and once introduced they always retain the privilege of resorting there. Foreign officers belonging to the men-of-war in port are always invited to the balls, and if they wish it they can get otherwise introduced to the Casino without difficulty, where they are sure of being received politely, and becoming acquainted with the most respectable part of the Frank population.

The Greeks have likewise a Casino on a similar plan, but on a

more contracted scale, the building being smaller and the accommodations not so good.

Smyrna contains, it is supposed, 150,000 inhabitants; who consist of Franks, Jews, Greeks, Turks, and Armenians, and dwell in distinct quarters. The Frank quarter is next to the marina, and is much the handsomest, the houses being larger and better built. They run back from the water to Frank street, and instead of having streets between, have passages beneath them and connecting their courts together. This mode of building is objectionable, for several reasons; the chief of which are that the privacy of the houses is in a measure destroyed by the passages and courts being common thoroughfares, and, that the doors both next the harbour and Frank street being closed at night, put passengers to great inconvenience, and entirely prevent ventilation. This, indeed, is very imperfect during the day; and if any person believes that narrow streets render a city cooler, he will soon change his opinion by walking through Frank and other back streets to breathe their close and sultry atmosphere, and then going through one of the passages to inhale the sea-breeze upon the marina.

The houses here, like the rest in the city, are built either of stone, or of frames filled in with stone or brick, and then planked or plastered over. They are all covered with brick-tile, and have the upper stories and roofs projecting over the streets, so that they are much nearer above than below. This plan of building being adopted in other quarters, even where the streets are only ten or fifteen feet wide, daylight is almost as completely excluded as sunshine, and a person of common agility may easily jump from roof to roof.

Of other quarters I will not speak at large, merely observing, that all of them are very confined, and have contracted, dirty streets; but those of the Jewish quarter for filth and dampness bear the palm, for they are disgusting both to the sight and smell, and it is difficult to believe that rational beings could voluntarily inhabit such sinks of uncleanliness. The Jews doing so serves to prove that habit can make us reconciled to the most offensive objects.

Besides the mosques the principal public buildings are the hospitals, of which there are eight; the Dutch, Austrian, French, English, Greek, Armenian, Turkish, and the Catholic and Protestant Hospital, or the European Lazaretto. Of these buildings I will not speak particularly, but refer those who desire to know the minutiæ concerning them to the Number of the American Journal of the Medical Sciences, for August 1837.

Each hospital was built, and is supported at the expense of the nation whose name it bears, except the European, which is for the benefit of all the Frank population, and is supported by them in common; all poor persons who are affected within or have been exposed to plague, being sent there to be cured or quarantined.

It is a subject of much regret that, notwithstanding the great number of American ships resorting to Smyrna every year, no hospital or other place has been provided for the reception of such

seamen as need medical or surgical treatment, and that whenever any of them get sick they are obliged to remain aboard, and suffer accordingly, or to obtain admittance into the hospital of some other nation. If we had had one when the small-pox broke out aboard of the United States, the seamen infected might have been sent to it, and not taken to sea to communicate the disease to all persons in the ship who were unprotected. That we should have a hospital at Smyrna, or in its vicinity, is not only due to humanity, but to the interests of commerce, to that of the navy, and of the whole nation. Adopting the method of other Christian nations one might be erected and maintained at a moderate expense. If this could not be done at the public charge it might be by a moderate deduction from the pay of the seamen who should be sent to it as patients. For medical officers, some in the navy would be always ready to serve on condition that they will be considered engaged in active service.

Bagnios.—Of these there are a number. The principal one is that by the bazaars; and the description of it will serve for that of all the others. It is a spacious edifice, divided into two grand apartments with a small communicating one between them. The roof of the house is composed of two domes, one being over each of the grand apartments and forming its ceiling. In the one next the street are ottomans, shelves for towels and counterpanes, and a bar where the keeper sits to take charge of watches and other valuables, and to deal out refreshments to the bathers. The two other apartments are for bathing, but the one most used is the other large one, which is at the back of the building. This apartment has a white marble floor, raised to a platform in the centre; a small chamber with an open top in each corner; fountains of cold and warm water on its sides; and numerous holes in its ceiling to admit air and light and allow the vapour to escape. Beneath its floor are the furnaces and boilers. Water is supplied by pipes passing beneath the city from the aqueduct.

A person wishing to bathe enters the front apartment, makes choice of an ottoman, deposits his clothes upon it, gives his watch to the keeper, wraps a towel around his head, another about the shoulders, and a third about the loins, and putting on a pair of clogged slippers, walks into the back apartment, or stops in the small one. Entering the former he is forthwith surrounded by a crowd of servants perfectly naked with the exception of the loins, and recommending their different places for bathing with as much earnestness as drivers do their hacks. Having chosen a place, which is either in a chamber upon the central platform, or on one of the low ones at the sides of the hall, he lies down upon a towel and throws off those with which he is wrapped. Oppressive heat and an earnest sense of suffocation seize him, owing to the sudden change from fresh air into an atmosphere charged with dense steam arising from the heated

water which issues from the fountains, and runs over the floors; but he is relieved from all unpleasant symptoms as soon as he begins to perspire. This quickly occurs, and in a few minutes a profuse sweat breaks forth and continues during his stay in the bath. As soon as the perspiration takes place, the servant, or *telacke*, covers his right or left hand, as most convenient, with a black hair bag, like a mitten and rubs him from head to foot with such skill and force that the dead cuticle is rolled up into enormous cylinders, sometimes several inches long and as large as quills of good size. The *telacke* next fills a basin with soapsuds, throws them over the bather; then taking a whisk of white horse hair, gives him another scrubbing; washes off the lather by repeated aspersions of water taken from the nearest fountain; peels off corns and other excrescences; and, if it is desired, performs the operation of ovolar, or that of twisting and cracking all the joints of the extremities; and, finally, by the application of cups made of horn, and bored at the small ends, extracts several ounces of blood from the feet. The bathing finished, the *telacke* wipes him as dry as the steam will permit, envelopes him again in towels, restores the slippers, and leads him back to his ottoman. He there takes off the towels, lies down, and covers himself with a counterpane. When sufficiently cool and dry he dresses, reclines or sits cross legged, drinks a cup of coffee, smokes a pipe, and when done calls a servant, deposits his reckoning on a small waiter handed him, and having retaken his watch, &c., walks out to make room for some other person. The price of a bath is in proportion to the means of the individual taking it, varying from five to a hundred piastres; that is, from twenty-five cents to five dollars; but commonly a dollar is a full price for the bath, fees for servants and refreshments, and all paid over that sum is gratuitous.

Apothecaries and Physicians.—All persons deserving to rank under these professional titles are, without exception, Europeans by birth or descent. A number of the apothecaries are well acquainted with pharmacy, and keep a constant supply of the best medicines; most of which are brought from France. The best rhubarb is imported from Russia, and is exported in large quantites; but opium, which formerly was one of the principal articles of export, is now to be had only in small quantities, in consequence of the Sultan monopolizing the trade, and having nearly the whole of the opium made in Turkey accumulated at Constantinople, where, if a large quantity is wanted, the merchants and apothecaries are obliged to send. The Sultan's agents pay for it the price fixed by him, and having collected the crops send them to the store-houses of the capital; there to be dealt out at a large advance. This oppressive system is gradually causing neglect in the cultivation of this most valuable medicine; a corresponding increase in its price, and a diminution in the quantity raised, the cultivators realizing little or no profit from the reduced prices paid by the Sultan. With regard to the consumption of opium by chewing and making it into

drams, so far as my observation extended, the Turks of Smyrna in a great measure have abandoned both practices, and use very little of it in that manner. But were we to judge from the large importation of brandy and other spirits, and the use of these liquors, which, though expressly forbidden by their religion, are common among all classes, they would seem to be substituted for opium. It is therefore a question whether, as this practice is general, it is not quite as great an evil as the other, which was confined to a few individuals. According to accounts given me, fifty casks of brandy are now consumed for every one twenty years ago, and this change in the temperate habits of the Musselmen is attributed to the *Christians living among them.*

There are a considerable number of respectable foreign physicians. Some of them attend the hospitals, for which fixed salaries are received; and others belong to the navy and army of the Sultan. All of the former, and some of the latter, attend to private as well as public business, and by that means obtain a comfortable subsistence. The faculty, however, is disjointed and wants unanimity, as is too much the case elsewhere, each member attending to his own special interest, and caring nothing about that of the profession generally.

They have no medical association; no academy; no college; and neither a paper, nor pamphlet, nor any periodical whatever to record and make known important professional information. This want of public spirit and organization necessarily causes many valuable facts regarding remedies, diseases, and the preservation of health, to sink into perfect oblivion. As the Turks have a great partiality for Christian physicans, and admit them into their families with more freedom than they admit any other persons, would it not be more conducive to benevolence and the diffusion of Christianity to employ missionaries who have studied both divinity and medicine, and who, having free access to their houses, might be able to benefit the body and likewise the soul? These missionaries would most certainly effect more good than the others, who, by their being excluded from an intimate acquaintance with the Turks, and especially the women and children who are confined to their houses, have very poor opportunities of advancing the cause of the Christian religion, and hence have not been as successful in their missions as is desirable.

Diseases.—From the account given of its climate, location, &c., the diseases to which Smyrna is most subject must be apparent, and it is hardly necessary to state that miasmatic fevers abound in it and in the neighbourhood. The most common of them are intermittents, and these prevail chiefly near the harbour, and on the northern side of the gulf towards the salt pans, the country being more marshy there than upon the southern side. Though the inbat is extremely refreshing and delightful to the feelings, yet it is doubtful whether it does so much good as harm; for sleeping over the flats and fens near Cape Salines, it of course impels all

their noxious exhalations before it; and these being confined by the mountains to the water, are driven immediately against the city, which, from standing on a promontory projecting into the southern side of the gulf, is directly in their way.

In 1833, the John Adams, as before mentioned, being employed in convoying American vessels from Smyrna, from the middle of May until that of September, and having been lying in, or going down the gulf a great part of the time, had her crew so disabled by these fevers that she was forced to go into the harbour of Milo and remain there several weeks. But the most striking proof of the insalubrity of the climate, and of the great quantity of malaria existing in the air of Smyrna, was given during the last summer. The United States entered the gulf on the 30th of May with eighteen on the sick list, of whom not one person was affected with fever, and left it on the fifth of June, after lying at anchor off the city only for four days, with twenty-seven upon the list; of whom one was affected with neuralgia, and six with remittent and intermittent fever.

So far as I can learn, other public vessels of this country which have visited Smyrna, and particularly if they have staid long in the gulf, have had their crews afflicted with these diseases. I was informed by an officer who belonged to the Java when she visited Smyrna in 1829, that she had at one time a hundred and thirty of her crew on the sick list, with fever, diarrhœa, and other complaints. This vessel, it may be well to remark, was six months within the gulf; so that it is positively proved her crew could not have been affected from morbid causes elsewhere.

The number of cases of fever which occurred during last summer aboard the United States did not arise from the weather, for it was perfectly fair the whole time; and whatever humidity existed in the air was owing to no other cause than the heat creating a greater evaporation from the gulf. The only thing remarkable respecting the moisture of the atmosphere was, that although the decks were washed at daybreak they were not dry by noon, when the thermometer in the shade was at 77° F.; an unusual occurrence during fine weather.

Next to fevers, small-pox, plague, and pulmonary complaints are the most usual diseases. They prevail endemically and epidemically. Small-pox appears to be always in existence—vaccination being imperfectly and not generally practised—and no intercourse can be held with the place by a man-of-war, especially by a large one having a crew proportionate to her size, without danger of getting this horrid disease aboard. The United States, as I have already had occasion to state, got it there in the winter of 1836 and 1837; and the Constitution, the winter preceding, suffered the same misfortune; but the person infected having been forthwith sent ashore, a general contamination of her crew was prevented.

The plague has prevailed epidemically four times within the last nine years, and did so last in 1837. It then broke out in the

fall, continued until summer, and proved most destructive in the spring. Before ceasing its ravages ten thousand persons in the city and its vicinity are calculated to have become its victims. While I was there during its prevalence, very few cases occurred in the city, and most of them in the village of Bournabat, and at the town of Vourla.

It is the opinion of the Smyrniots that the plague which afflicts them is much more severe than that of Constantinople, and hence they say the latter is not to be feared. This opinion is perhaps owing to the fact, that a case of plague being imported from that city is not so apt to infect the people of Smyrna as when one breaks out from causes peculiar to the place, and predisposing the people to infection.

When the disease is prevalent the wealthy inhabitants shut themselves up in their houses, and undergo a voluntary quarantine until danger no longer exists; holding no communication with one another, except what cannot be avoided; and receiving their provisions through water, which is thought a purifier, and a disinfecting substance. Cats at this period are prevented access to the houses, from a belief that these animals can communicate the plague from one person to another. Instances are related of this having happened, and many others are adduced to prove the extreme contagiousness of the disorder. By many persons absolute and direct contact of clothes or persons is thought necessary to cause infection, while others hold an opposite opinion, and believe this may happen indirectly, and through the medium of the atmosphere and fomites. Many facts are related to substantiate the last belief, and in my opinion it is the most correct. This question might be settled satisfactorily, if the faculty were not exceedingly cautious in exposing themselves to the disease. One of them informed me that no physician would attend a patient affected with it, because if he did he would not be employed to attend patients labouring under other maladies. From this circumstance it appears that the faculty of Smyrna know as little of the plague from personal observation and practice as the physicians of the countries where it never prevails; and hence their knowledge of it is entirely theoretical. The treatment of patients, then, who are affected with plague must be bad to an extreme, and they are either left to encounter it unaided, and unadvised, except by the few friends who have courage enough to risk infection themselves, or they are obliged to submit their lives to the care of the most ignorant and debased empirics. In January 1837, notwithstanding the severity of the weather, the unfortunate beings affected with this fell complaint at Bournabat, as was customary, were carried into the fields, and being placed beneath tents were allowed to remain and terminate their miserable existence; or they were compelled to suffer for want of those comforts so important to the sick until they could return to their homes without risk to their friends and neighbours. Having to undergo the worst of treatment, to contend with cold, hunger, thirst, and a violent disorder,

few of them lived to see their homes. Plague being thus treated, who can wonder that the mortality should be so great, and that in one year ten thousand of the inhabitants should have been destroyed.

During winter all kinds of pulmonary complaints are met with, but catarrh and pleurisy are most common. In the winter of 1837, when the United States arrived at Smyrna only fifteen were on the sick list, and when she took her departure there were ninety on it, and eighty for these affections alone. This was undoubtedly owing chiefly to the influenza which prevailed there and in many other places at that time, but it serves still further to show that the climate of Smyrna is not a desirable one for invalids with pulmonic affections. A number of these persons are said to have of late years resorted there from the United States for the benefit of their health. I met with some, and I have heard of four or five who have ended their lives in the place, instead of recovering and returning well to their country. Their fate still more satisfactorily proves what folly it is for a patient to leave his friends; give up the comforts of home; undergo the hardships, and encounter the dangers of a voyage of five thousand miles; suffer from the absence of those most loved; and live in a strange city which has a worse climate than a great part of his own country; with the additional drawbacks of bad hotels, damp and filthy streets where the sun never shines, and which after all abounds in the very disease with which he is affected.

PALESTINE.

With no country bordering upon the Mediterranean is the traveller more pleased when he is approaching it than he is with this one, so noted in profane and sacred history. Whether he be a divine, an antiquarian, or a person visiting it for the sake of gain, or for information, and whatever may have been the height of his expectations he will not be disappointed.

The first object of which he has a view in approaching the northern part of the coast is the rocky, jagged, stupendous ridge of Lebanon, raising its snow-capped summits to the heavens. Next he beholds Anti-Lebanon, obscured in mist; and gradually as he draws nearer, he sees displayed its terraced sides, cottages, villages, towns, gardens, and farms in the finest state of cultivation, and decorated with forests, groves, vineyards, and orchards of mulberry, orange, apricot, and other choice fruit-trees. When he has gotten within a short distance of land, he sees the billows dashing against, and venting their fury on the high craggy precipices, or losing themselves in the deep and dark caverns beneath them, or rolling

fall, continued until … wash and inundate some sandy beach, spring. Before … and foaming, to recover their exhausted city and its vi…
While I was … southern part of the coast, the scenery is not in the city, … but still beautiful; and whatever may be the town … picturesque, pleasure occasioned by the change, the traveller is
It is th… associations created in his mind, when he sees them in… forming a vast pasture for the innumerable they … plains and herds of cattle scattered over them; when he owin… sheep many battles which have been fought upon them, cit… the deeds of Cœur de Lion and Saladin, and viewing o… John d'Acre, recollects the exploits of Alexander and …

The Lebanon mountains having reached St. John d'Acre decline into hills, and the range of Carmel arising, stretches from north to south at the back of the plains, and about twenty miles distant from the sea. All these mountains are composed principally of secondary limestone interspersed with some granite. The land is mostly of clay and red and white sand; the former being found towards Tripoli, especially Baireut, the latter about Jaffa. There is, however, a great difference between the hilly and mountainous land and that of the plains and valleys, which last has a rich, alluvial soil, capable of producing any thing; whereas, the former is well suited only for wheat, vines, olive, and other trees, and, when it has not been terraced to prevent the soil from being washed away by the rains of winter, it is unproductive and rocky.

The limestone is similar to that of other countries described; being grey externally, yellowish internally, and so soft as to be used for making houses, fences, and tombs, it being easily cut with an axe, chisel, or other iron utensils. The houses of Tripoli, Baireut, Sidon, Jaffa, and Jerusalem are all built of it, and the tombs of the last place are formed by its excavation. But Palestine has been so well described by a multitude of writers, that I shall here end this general sketch, and proceed to speak of it only in a professional manner.

Botany.—The country about Tripoli and Baireut is the most productive; yielding all the kinds of vegetables met with in the Mediterranean, and a great variety of the finest fruit, such as oranges, peaches, apricots, quinces, figs, olives, red and white grapes of superior size and flavour, and pomegranates of huge dimensions. About Tripoli the vines are allowed to grow wild, and, spreading over the trees, to shade the roads. Their grapes though small are sweet and finely flavoured. The prickly pear is an abundant fruit in every part, both where the country is fertile and where it is sterile, the quality of the soil seeming to cause no difference in its production; for it grows equally as well on the sandy plain of Jaffa, as on the clayey, alluvial soil of Tripoli. Apricots are so plentiful that they are dried in very great quantities, and used as dried peaches are in the

United States. Three ship loads are said to be exported from Baireut alone for foreign consumption.

Pomegranates are most abundant at Jaffa; the gardens there being filled with the trees, but they are much larger and handsomer at Tripoli. Olive trees abound from one end of the country to the other, covering hills, mountains, plains, and valleys, and affording shade to the sheep, goats, cattle, horses, mules, and camels, and a never-failing store of food to man, who has no other trouble with them than that of planting them and gathering their fruit.

Around Sidon and Baireut the mulberry tree is by far the most common, being cultivated with great care for the raising of the silkworm, from whose product those towns derive a large revenue. The silk is sold raw, or is manufactured into belts, shawls, and other clothes, which, from the cheapness of the material and labour are to be had at incredibly low prices.

The chief forest trees are the cedar, elm, pine, *quercus cerris*, and the real sycamore, which has a trunk and leaves like that of this country, but bears a very small fruit, shaped precisely like the fig, and having its inflorescence within. The fruit grows mostly around the roots of the large branches, and being well flavoured and harmless is much eaten by the poorer people.

From the *quercus cerris* the galls are gathered, and used as a medicine or drug, as in other parts of Asia Minor. Of the cedar, I will only remark that it is the same as those growing on Lebanon; but differs from ours in being more spreading and less aromatic, and in having leaves resembling the spruce-pine. Besides these trees, are the date, thorn, aspin, *karoob*, pride of China, and many others. The two former are the most common to the south, and the last one to the north, and particularly near Tripoli. The thorn is found chiefly along the rocky, barren ravines of the Carmel mountains. The pods of the *karoob* are said to be the husks eaten by the 'Prodigal Son.'

Of medicinal plants the most common and important are the *mentha viridis* and *piperita*, the *scilla maritima*, *cucumis agrestis*, *datura stramonium*, *nicotiana tabacum*, and *ricinus communis*. These plants are most abundant in the neighbourhood of Tripoli and Baireut. The *menthæ* are found growing on the banks of rivulets; the *stramonium* grows in ditches and on the road-sides; the *cucumis agrestis* on the hills and declivities, especially on the Mount of Olives, at the back of the Church of Ascension, and behind the Citadel of Tripoli, where likewise is seen a magnificent specimen of the *ricinus*, it being of perennial growth. This tree was about eighteen feet high, had branches several inches in circumference, and a trunk about a foot in diameter near the ground. Its fruit, however, was not so large as that of the *ricinus* of the United States, nor as the fruit of that of ordinary size growing in the plain below the town. When I first saw this tree, having merely taken notice of its rough grey bark, I did not recognize it until I looked at the leaves and fruit. The *cucumis*

agrestis grows in thick, large, patches or bunches, and hangs upon a slender stem with its base upwards, its apex downwards. The stem being fixed very loosely, the cucumber as soon as it is touched flies off, and discharges its seed with great violence and for several yards distant. They issue from the orifice occupied by the stem, unless at the time when struck a wound is made to perforate its coats. In this case the seed are squirted from the wound, and the cucumber generally remains upon the stem. The squirting is caused by the very great elasticity of the coats, which contract as soon as the seed are discharged, and when wounded gape so wide as to completely expose the cavity which contained them. Besides these plants are the *phytolacca* or common poke, the *anisum vulgare*, and a number of others, of small medicinal virtue, which do not need particular notice.

The most ordinary products of the soil are wheat, barley, flax, and the red podded or yellow cotton; but the two last articles are raised only in moderate quantities.

STATE OF THE MEDICAL PROFESSION.

The physicians of Palestine consist of two classes: those from Europe, and the regularly educated; and those who are natives of Asia, and are all empirics. The former are by no means numerous, and about a half of them belong to the Egyptian forces. At Tripoli, a town containing 15,000 inhabitants, situated in a rich country, and possessing considerable commerce, there was not a regular physician, nor even an apothecary, deserving that name; all the professors of our art being Arab empirics. That no European physician should have settled there is singular, the town being of such importance, and the country so sickly.

At Seyd, the *Sidon* of Scripture, with a population of 8000 inhabitants, and a garrison of 4000 Egyptians, the only physician was a Frenchman belonging to one of the battalions; and at Baireut, a town about the size of Sidon, with a thickly populated country, were only two regular physicians there; one a Neapolitan, the other a Greek, and a native of Salonica, who was educated by a French physician of that place, and had practised for some years in Damascus.

At Jaffa the only physician was a Neapolitan. He had resided many years in the country, and a long time at Baireut, from which he had lately removed, to become physician of the quarantine at the former place.

In Jerusalem the profession is in as degraded a condition as in other parts. Although it has a population of 30,000 souls, the only physician in it was a Frenchman, who belonged to the Egyptian garrison, and was a temporary resident; but all others practising the healing art in the place were Arab empirics. This is to be greatly regretted; for the lives of many pilgrims and travellers have been lost there and elsewhere in the country, from the want of efficient medi-

cal attendance. Among these persons was Mr. Costigan, a young Irishman, of fine abilities, a highly cultivated mind, and uncommon zeal. I was informed that, being determined to explore the Dead Sea, he built a boat for the purpose at Jerusalem, transported it on a camel, and having embarked with a servant, made the desired observations and researches. Most unfortunately their store of fresh water was lost overboard through the stupidity of the servant; and in returning they suffered so much from thirst, heat, and fatigue, that they reached the shore with great difficulty, and were both immediately seized with a raging fever. The servant* died at Jericho, where they landed; and though Mr. Costigan was conveyed to Jerusalem, yet he lived so short a time afterwards that he was unable to make known the result of his researches. His untimely death is to be much deplored, being a most serious loss to science; for had he lived, we might have had our curiosity respecting the Dead Sea fully gratified.

The native physicians are generally Arabs, and being self educated, no medical schools existing in any section of the country, and none of them going abroad to study their profession, they are as illiterate and unskillful, according to accounts, as it is possible for them to be. Of this the people are aware, and seldom employ them if a Frank physician can be had. Their ordinary dose of jalap is from one to two drachms; that of castor oil three ounces; and that of tartar emetic four grains. Calomel is used and abused as in other parts of the world; and though it is given in smaller doses than is customary in our own country, yet from their continuing it for a protracted period it does much mischief. For example, a young man of Aleppo who came aboard to consult me, and was suffering from nodes and other effects of mercurialism, informed me that, having been thought to be affected with syphilis by an Arab physician of that city, he was prescribed four grains of calomel three times a day, and had taken it in that quantity for two years.

Another instance of their practice was related to me by our estimable consul, Mr. Chaussend. He stated that he himself was once seized with fever at Tyre, and sent for one of the physicians of the town. The doctor came, examined him, and greatly to his astonishment sent for four pounds of cucumbers. These being brought he had them mashed, and, squeezing out the juice into a vessel, presented it to his patient to drink; but Mr. C., having always understood that it was poisonous, refused the draught, dismissed the doctor, prescribed for himself, and got well.

Mr. Chaussend likewise stated that at Baireut it is a common practice for the physicians to treat diseases by presenting the cross to their patients, and giving them holy water to drink. The *modus operandi* of these remedies I know not, but suppose that, if they ever have a beneficial effect, it is altogether from the predisposition

* Mr. Stephens says (*Journey to Arabia, Petræa, &c.*), that he carried the boat from Baireut, and that the servant was a Maltese sailor, whom he saw afterwards. This statement is probably the most correct.

induced by the blind credulity of their patients, acted on by an excited imagination.

But whatever may be the want of skill among the native practitioners in the treatment of medical diseases, they have much less in that of surgical ones; and the people are most deplorably in need of proper assistance even in the most common injuries. Instances of fracture of the bones were related, in which the limbs were permitted to remain undisturbed in their deformed condition, and having gotten well to subject the sufferers to inconvenience for life.

Apothecaries.—Taking their qualifications and a knowledge of their business in consideration, they are generally as bad as the physicians. According to what I saw and heard there was but one efficient apothecary in the country. He was a European who lived at Baireut, and who, having much business, was making a fortune. All the other apothecaries were natives. Their shops were so strange that a description of one may not be uninteresting. This was in a bazaar at Jaffa: it was about ten feet high, eight wide, and fifteen long. It was open in front from the ceiling to the floor; and therefore, not wanting them, had neither doors nor windows, but had two shutters, one above, the other below, fastened with hinges. The lower shutter formed a counter when let down, and the upper a screen from the sun when raised. At night these shutters being brought together closed the house, admitting neither air nor light.

All the medicines, except those on the counter, were placed on shelves, and kept in wooden boxes with tops, like those for pills; and the names of the medicines written upon the front of them in Arabic characters. Among the medicines were sulphur, sulphate of iron, gum arabic, and many others in common use here, which had been imported from Europe. Besides these were many more, but all of the vegetable kingdom, which had been brought from the interior, raised in the neighbourhood, or imported from Egypt.

The apothecary, a large, well-dressed, comely man, clothed in Turkish costume, sat cross-legged upon one end of the counter, and receiving from an assistant the articles asked for by the purchaser he weighed the quantities wanted, and having laid down the scales then calculated the prices with the utmost gravity and dignity.

Diseases.—The most common are pulmonary affections, smallpox, dysentery, hepatitis, ophthalmia, fevers, and plague. Leprosy is said still to be in existence, particularly at Baireut and Jaffa; but although I endeavoured to find some, I saw no cases. There is no doubt, however, of this complaint existing, if the testimony of the faculty is a sufficient proof. Of the fact I was informed by physicians in both of those places; and my not meeting with those afflicted with this disease, was probably owing to their being such disgusting spectacles that they kept aloof from society, and secreted themselves to escape public attention. I saw one case of hydrocephalus, another of hemiplegia, marasmus, and partial idiocy induced by onanism, and several persons with spinal

disease. Small-pox is destructive from the want of vaccination; it being seldom practised.

Dysentery is a common disease, and is treated by the regular physicians after the same plan as in this country; but by the Arabians with manna, cassia fistula, rhubarb, and emulsion of almonds.

By far the most common disease in every part of the country is ophthalmia; but it is found mostly to the south, near the sea coast, where there is a great accumulation of sand, which when the wind is strong is constantly drifting. About Jaffa, nebula, leucoma, psorophthalmia, and all other affections of the eyes were prevalent. At Ramla, the *Aramathea* of Scripture, which is ten miles from that place, among the first persons I saw were three blind men conversing together; and before the door of the American consul's house, where we stopped, out of twenty persons gathered before it from curiosity or to beg, nine were affected with opacity of the cornea in one or both eyes. Moreover, in riding from this house to the borders of the town, a distance of two hundred yards, thirty-four persons were seen who had suffered a like misfortune, and were partially or totally deprived of sight; so that I do not think it improbable that one-half of the population have imperfect eyes, either from acute or chronic ophthalmia of various degrees of intensity. Nearly all the blind I saw were males, and this may be ascribed to the females living more plainly, keeping much within doors, and when they go out wearing veils, shawls, and handkerchiefs, to protect their faces from the air, and from being seen. In the males the numerous instances of blindness and ophthalmia may be attributed to the great quantity of sand and dust, the exposure of the eyes to an ardent sun, wearing turbans, or caps without brims, which afford no protection; also to the want of proper medical attendance; and to the blowing of the sirocco wind. We encountered this wind on the Carmel mountains as we were going to Jerusalem. It blew directly from the south-east, and was so excessively hot and dry, and so charged with impalpable sand from the deserts of Arabia, that the skin became parched, the lungs oppressed, and the eyes inflamed.

The prevalent fevers are intermittents and bilious remittents. These are to be met with throughout the country; but they are by much more numerous in the fertile and level plains of Tripoli. This is readily explained. The river Kadisha, arising from the foot of Lebanon flows through the plain immediately below, and passes on between the two high hills, upon the western sides of which, and extending towards their base, Tripoli is situated. Having reached the town it is dammed up to supply its fountains, and to be distributed in countless streams to the farms and gardens between the hills and the sea shore. The soil being very rich, vegetation extremely luxuriant, the water frequently stagnant from the flatness of the country and damming the streams to divert them from one part to another as may be required for irrigation, the ground is kept

constantly humid, and malaria is formed in abundance. Fevers are therefore so certain to seize those persons who reside in the plains, that they are very thinly inhabited: few of the gardens or farms have houses, whereas, in the neighbourhood of Baireut, this accompaniment is seen without exception.

Of the plague it is unnecessary to say much. It prevails in Palestine as it does elsewhere in Asia, and seems to arise from the same causes, to be governed by the same laws, and to be always in existence, either prevailing locally or generally at every season of the year; but principally in the maritime towns. It broke out at Baireut in the summer of 1836; and was stated on the best authority to have originated from a letter received there from Alexandria. The person to whom it was sent opened it without purification, was soon afterwards taken sick with the disease, and died; but not before infecting his friends by intercourse with them, even to the causing of buboes in the armpits. Seventeen persons, from his imprudence, lost their lives; and so incensed were his fellow-citizens at his conduct, that nothing but his death saved him from that which their resentment would have inflicted.

During last summer the disease prevailed along the whole coast to such a degree, that when we arrived there on our second visit the ship could not communicate. Hence I was disappointed in my expectations of pursuing the investigations begun two years before, and was unable to gather such other information concerning the country as I desired, and which might have rendered these Observations more satisfactory to myself, as well as more interesting to the reader. Of him I now take leave, with a hope that, for the reasons assigned, he will look with a lenient eye on whatever errors or imperfections he has discovered.

APPENDIX.

A.

Since writing the preceding remarks on phthisis pulmonalis, I have been favoured by Dr. Bell with some extracts from the Inaugural Thesis of Dr. Sinclair of the British Navy, in which he speaks of the prevalence of this disease among the seamen of their fleet in the Mediterranean, during the years 1810, 1811, and 1812. According to Dr. Sinclair's statement, the opinions I have advanced on the subject are fully substantiated; for he states that agreeably to the returns made of the disease of the seamen in the fleet, the crews of which amounted to 30,000 men, 2113 patients were admitted into the hospitals of Malta, Gibraltar, and Minorca, during those years; and that 596 of them were affected with phthisis pulmonalis and pneumonia. He also states that out of 455 cases of phthisis, 151 of them terminated fatally before they could be shipped off to England, where he recommends persons affected with the complaint to be sent. Moreover, he thinks the climate of the Mediterranean even worse for them than that of the northern shores of Europe. He says of the former: "It is indeed true that it may claim immunity from the great permanent heat of the tropical, and cold of the northern regions; but it is subject to an inconstancy of weather and an irregularity of temperature altogether unknown in either of these. The climate acts secondarily also, by exciting diseases (the principal of which is fever) which leave a predisposition to pulmonic affections."

Finally, he says, that phthisis sometimes proved fatal in a few weeks, and was rarely protracted beyond five or six months.

That this statement is correct, may be proved in a measure by the following one, of the cases which occurred aboard the United States:

	Admitted on the Sick List.			Died.		
Case I.	January	4th,	1837,	January	30th,	1837.
II.	„	7th,	„	March	21st,	„
III.	February	25th,	„	December	4th,	„
IV.	April	1st,	„	August	12th,	„
V.	May	10th,	„	September	24th,	„
VI.	June	9th,	„	December	10th,	„
VII.	January	6th,	1838,	March	2d,	1838.
VIII.	June	16th,	„	August	6th,	„

It is seen here, that the first and shortest case ended fatally in twenty-six days after admission; that the most protracted one was the third, which lasted less than ten months; and that the average duration of the disease was not quite four months.

I should likewise add, that the ninth and tenth cases were those of the two officers mentioned; and that one died in about five, the other in about eight months after being taken under treatment for the disease. Both of them died while returning home; one of them in Minorca, after having left our ship at Athens; the other one a few days after having left the Mediterranean, and got upon the Atlantic. Including these two cases, the loss by phthisis on board the United States was two per cent. during the cruise; her crew having consisted of nearly 500 men. This loss, as has been remarked before, was much disproportioned to that from other complaints; the death from which amounted to only four, or less than one per cent. Of these four, one died of fever, one of paralysis, one of small-pox, and one of jaundice. Four other persons were lost besides these; but one was drowned, and three were killed by falls.

B.

Since my return home, and my observations respecting vaccination were made, I have been much gratified to find that not unfrequent imperfection of the operation has eventually excited the attention of the profession both in Europe and in this country. My remarks were applied chiefly to vaccination as practised in our naval service, and to what I myself had witnessed, or had gathered from other medical officers of the navy; but it seems from the numerous complaints made by the faculty generally, that they are applicable to vaccination everywhere. I do not wish, however, any one to misconstrue what I have said, and think that my faith in the efficacy of that divine preventive of the foulest disease with which man is afflicted, has been either shaken or overturned. Far from this being the case, I believe as firmly as ever I did in its virtues; for it is certain that I know of no person who has died of small-pox after being properly vaccinated. Moreover, I can state that, save in one or two instances, I have never known any person with a well defined vaccine cicatrix to have any thing more than the disease in a modified and very mild form. To conclude, I will state that it may be well to revaccinate where there is the least doubt concerning the efficiency of the previous vaccination, and that the vaccine virus should be as fresh as possible. But I am not as yet a believer in the doctrine of Dr. Heim, and other German physicians, that after the lapse of a certain number of years vaccination loses its protective power, and must be repeated; for I have not met with any *man* of mature age who, although he may have been vaccinated only once, and that in childhood, was affected with small-pox, either in its virulent or modified character.

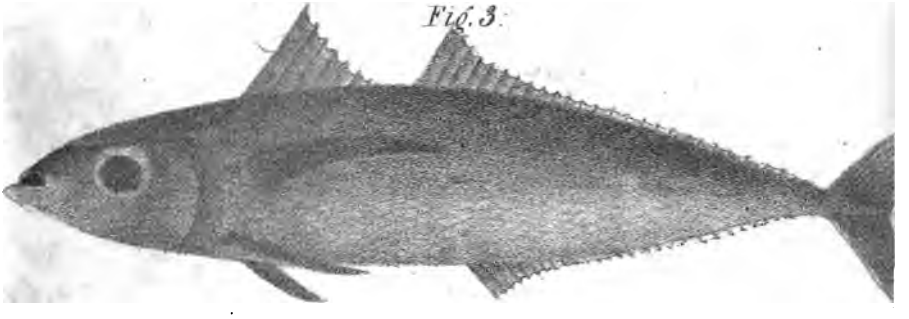
THE END.

N°1.

Fig. 1 & 2

Monsters preserved in the museum of the convent of Jesus, Lisbon.

Fig. 3.



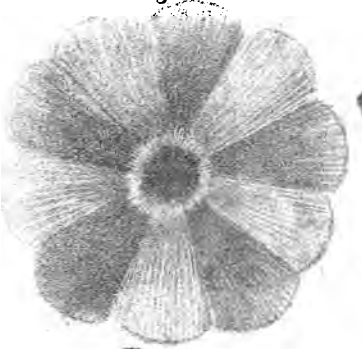
Poisonous Mackerel of Gibraltar.

N°2.
Fig. 1.
Fig. 2.
Fig. 4.
Myrtus communis or Mortoner of Minorca.
Fig. 3.
Cucumis agrestis of Minorca.
Fig. 5.
Pistacea lentis-cus of Minorca.
Quercus ilex of Minorca

No. 3.
A
B
C
1
2
3
4
5

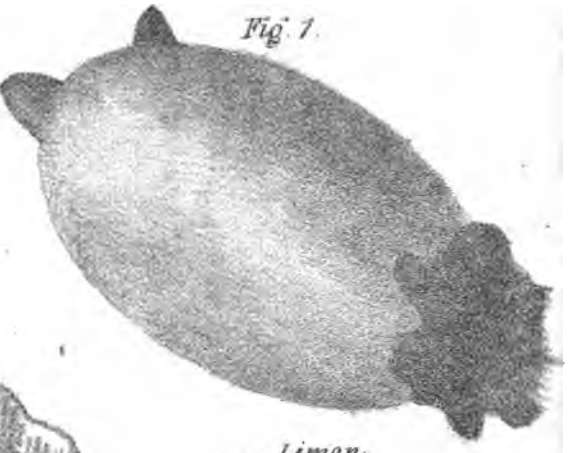
Nº 4.

Fig. 3.



Rosa.

Fig. 1.



Limon.

Fig. 2.

Pina.

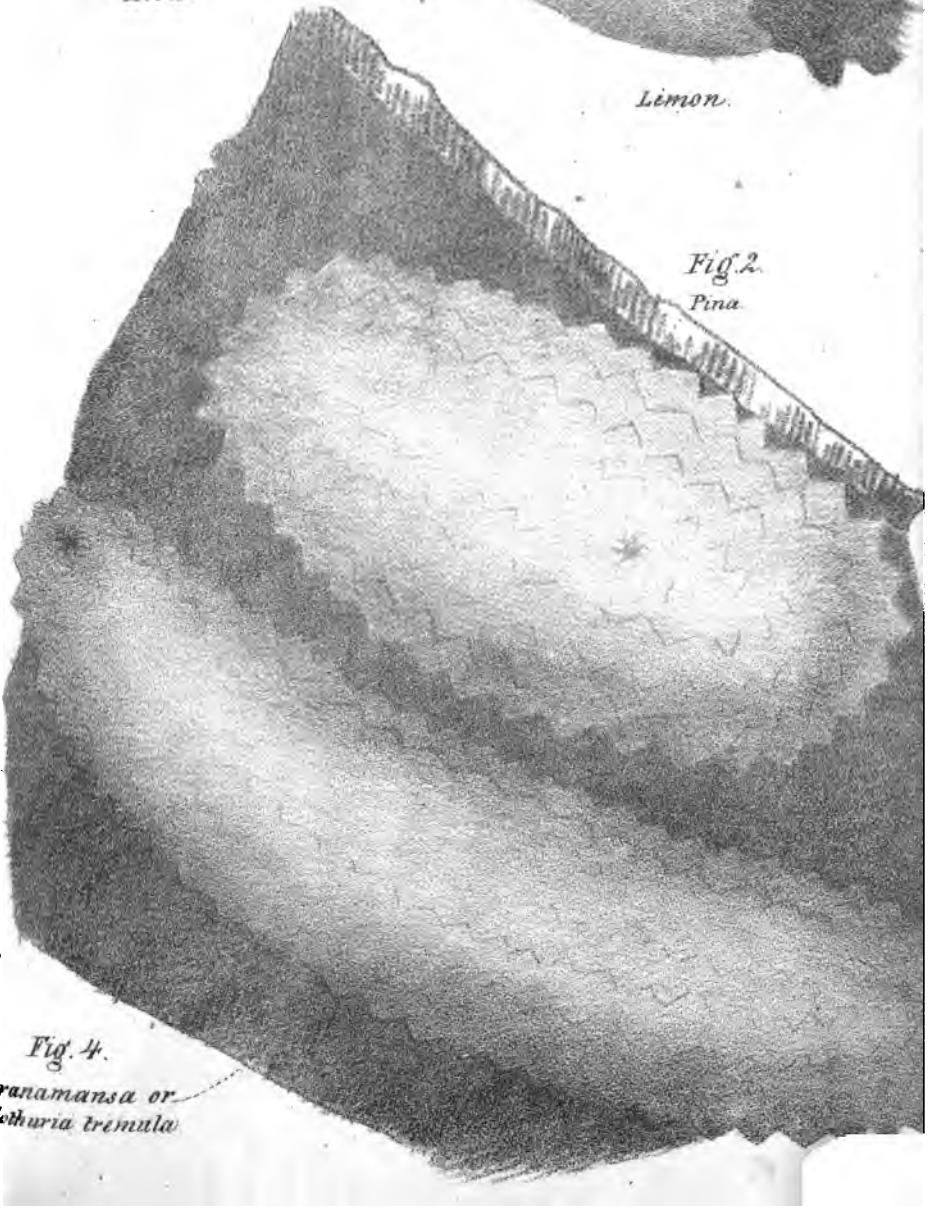
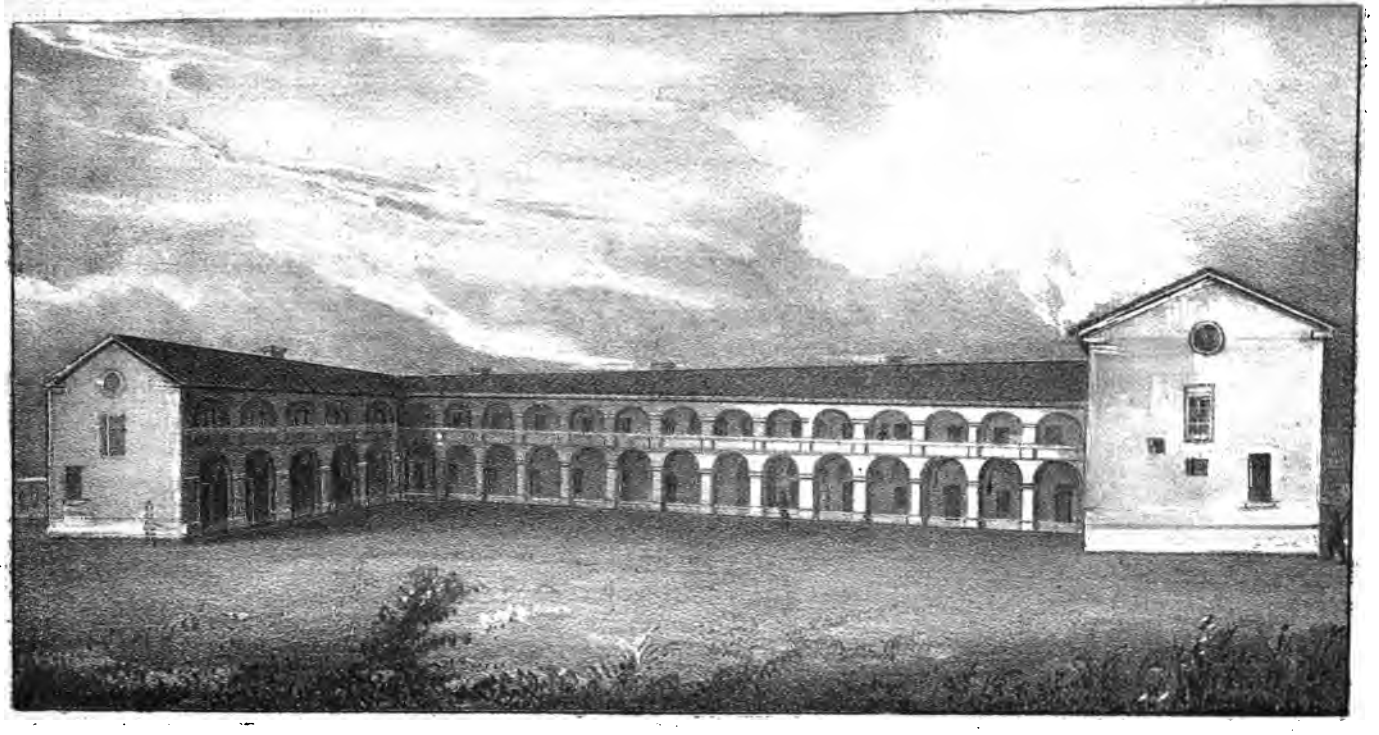


Fig. 4.

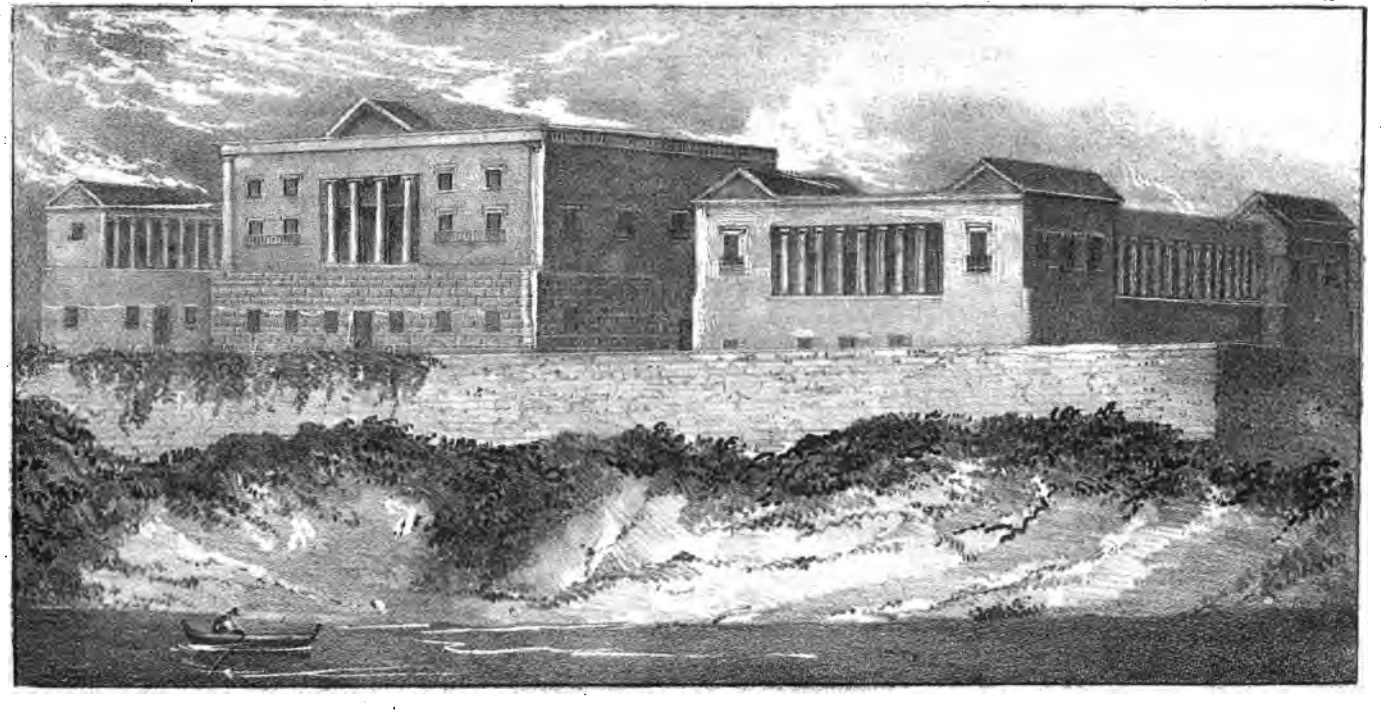
Woranamansa or
Holothuria tremula

Fig.4. Animal protruding from its tube
Fig.3. Root of the tube
Fig.1. The Clavelina



CHIEF HOUSE FOR PASSENGERS.

Lazaretto Port Mahon.



NAVAL HOSPITAL, MALTA.

ERRATA

TO "HORNER'S OBSERVATIONS."

Page	5,	line 10 from the top,		omit	*jaundice.*
„	6	„ 4, &c.	„	Read	*Hospicio* for *Hospiciis* and *Hospicis*; also at p. 55.
„	36	„ 3	„	„	*the Tagus* for *it.*
„	—	„ 33	„	„	*it is* for *they are.*
„	38	„ 43	„	„	*Estrella, Star* for *Estrellaetar.*
„	59	„ 12	„	„	*month* for *monthly.*
„	60	„ 33	„	„	*all* between *of* and *the.*
„	—	„ 34	„	„	*this* for *the.*
„	72	„ 38	„	put	a . for a , before *Its.*
„	79	„ 24	„	Read	*authorities* for *authorites.*
„	81	„ 41	„	„	*expenses* after *defray.*
„	96 }	-	-	„	*mayor* and *mayores*, for *major* and *majores*; same
„	97 }				at p. 101.
„	110	„ 32	„	„	*vienen* for *ven.*
„	113	„ last	„	„	*a fourth* for *half.*
„	115	„ 39	„	„	*it* after *and.*
„	119	„ 46	„	„	*sardina or* for *sardinas and.*
„	121	„ 41	„	„	*pao* for *upa.*
„	128	„ 30	„	„	*then* for *that.*
„	130	„ 18	„	„	*cause* for *course.*
„	133	„ 25	„	„	*rest* for *rests.*
„	134	„ 38	„	„	*Villa* for *Vila.*
„	135	„ 6	„	„	*the* before *quarries.*
„	148	„ 33	„	„	*from* for *in.*
„	149	„ 3	„	„	*cleavage* for *clearage.*
„	150	„ 18–19	„	„	*and* before *when*, and *only* after *allowed.*
„	157	„ 36	„	„	*extends* for *extend.*
„	166	„ 36	„	„	*if* for *and.*
„	177	„ 23	„	„	*steward* for *dispensing apothecary.*
„	186	„ 48	„	„	*the heads* for *head.*
„	192	„ 10	„	„	*Mimas* for *Mimras.*
„	204	„ 20	„	„	*at* between *especially* and *Baireut.*
„	206	„ 32	„	„	*there* before *were* and omit it in the next line.
„	210	„ 15–16	„	„	*when he had*, for *to the causing of.*

Directions to the Binder.

PLATE	I.	between page	38	and	39.
„	II.	„	112	„	113.
„	III.	„	120	„	121.
„	IV.	„	122	„	123.
„	V.	„	124	„	125.
„	VI.	„	134	„	135.
„	VII.	„	136	„	137.
„	VIII.	„	176	„	177.

METEOROLOGICAL REGISTER

FOR THE YEARS

1826, 1827, 1828, 1829, AND 1830;

FROM

OBSERVATIONS

MADE BY THE SURGEONS OF THE ARMY AND OTHERS

AT THE

MILITARY POSTS OF THE UNITED STATES.

PREPARED UNDER THE DIRECTION OF

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1840.

REMARKS.

In 1819, under the direction of the then Secretary of War, a system of meteorological observations was commenced, and zealously prosecuted by the late Surgeon-General; but as the instruments provided never exceeded a thermometer and a rain-guage, the observations, including those upon the course of winds, and other obvious states of the weather, have necessarily had a limited range. The results are consequently less comprehensive than the present state of meteorological science demands. As temperature is, however, the most prominent, and perhaps the controlling, element in the constitution of climate, and as thermometrical observations have been continuously made for twenty years, it would seem a matter of common right that these at least should be placed within reach of the scientific public.

The Meteorological Abstracts, which have served as the basis of the general conclusions deduced, do not embrace more, perhaps, than a third of the materials collected in the Surgeon-General's office. As the observations presented, however, extend over the entire domain of our States and Territories, it may reasonably be assumed that the results exhibit a fair expression of the general laws of our climate, which further research will ultimately confirm.

As meteorology has now become a subject of general interest, the importance of more extended observations is apparent; and the hope is indulged that the medical corps of the army, more especially as many of the military posts afford an opportunity of making observations in regions still in a state of nature, will ere long be furnished with the means of prosecuting more extensive researches, and of keeping pace with the progress of the science.

To the late Surgeon-General, J. Lovell, M.D., under whose efficient control the Medical Bureau was organized, and improved with a steady pace in its various details, pertains the merit of having established a system of reports, thus rendering it practicable to condense the results of years into the forms now presented.

The unpublished records extend as far back as 1820, the period when regular observations were first instituted. In 1826, the late Surgeon-General published Meteorological Abstracts for the years 1822-3-4-5, embracing positions in every region of the United

States. Tables for 1820 and 1821 were also published; but a want of uniformity in the mode of tabular arrangement, has, in a measure, defeated their object.

By direction of Thomas Lawson, M.D., Surg.-General U. S. A., the papers on file in the Medical Department relative to meteorology have been lately examined and arranged. "Diaries of the Weather," from 1820 to 1830 inclusive, have been condensed into tabular abstracts; the last five years being now presented in monthly results.

The thermometrical observations are confined to the superficial temperature of the places; and as the mean of each month is calculated from 90, and of each year from 1095 observations, the tables, it is believed, will give an approximation to the truth as near as can be realized by ordinary observation, and a mean sufficiently correct for every contemplated purpose.

The climate of the United States may be studied under three grand divisions; each of which contains many sub-divisions or systems of climate, determined by the influence of local causes. 1st. The Northern Division, extending as far south as the 39th degree of latitude, a region characterized by the predominance of low temperature. 2d. The Southern Division, in which a high temperature prevails; and 3d. The Middle Division, which exhibits phenomena vibrating to both extremes. These divisions will be regarded, in a great measure, as arbitrary, and are intended, as well to facilitate description, as to express the operation of general laws.

In reference to the sixty-five tables, embracing a period of five years, it may be necessary to remark, that the first twelve tables of each year give the mean of the observations of each month, and the thirteenth, the mean for the whole year. These tabular abstracts are the condensed results of the observations made at various posts, situated between 27° 57′ and 46° 39′ of north latitude, and between 67° 04′ and 95° 43′ of longitude west of Greenwich; embracing an extent of 18° 42′ of latitude, and 28° 39′ of longitude.

The first general division presents the greatest variety of climate. On the sea-coast of New England, the influence of the ocean modifies the range of the thermometer and the mean temperature of the seasons. Advancing into the interior, the extreme range of temperature increases, and the seasons are violently contrasted. Having come within the influence of the lakes, a climate like that of the sea-board is found; and proceeding into the region beyond the modifying agency of these inland seas, an excessive climate is again exhibited. The variations of the *isotheral* and *isocheimal* curves —the lines of equal summer and of equal winter temperature—thus afford a happy illustration of the equalizing tendency of large bodies of water. Hence the former division of the surface of the earth into five zones, as regards its temperature, has been superseded, in scientific inquiries, by a more precise arrangement; places having

the same mean temperature are connected by isothermal lines—the spaces between them are called isothermal zones.

A concise description of the chain of vast lakes or inland seas, which lie in the northern division, may be here properly introduced. The basin of the St. Lawrence is truly a region of "broad rivers and streams," containing, it is estimated, an area of 400,000 square miles, of which 94,000 are covered with water. From the western extremity of Lake Superior to the Gulf of St. Lawrence, the distance is about 1900 miles. These ocean-lakes have been estimated to contain 11.300 cubic miles of water—a quantity supposed to exceed more than half of all the fresh water on the face of the globe. Lakes Huron and Michigan, which have the deepest chasms, have been sounded to the amazing depth of 1800 feet without discovering bottom.

The following table, which gives the mean length, breadth, depth, area, and elevation of these several collections of water, is taken from a recent report made by Douglas Houghton, Esq., State Geologist of Michigan:—

	Mean Length. *Miles.*	Mean breadth. *Miles.*	Mean depth. *Feet.*	Elevation above level of the sea. *Feet.*	Area in square miles.
Lake Superior	400	80	900	596	32,000
Green Bay	100	20	500	578	2,000
Lake Michigan	320	70	1000	578	22,400
Lake Huron	240	80	1000	578	20,400
Lake St. Clair	20	18	20	570	360
Lake Erie	240	40	84	565	9,600
Lake Ontario	180	35	500	232	6,300
St. Lawrence . . .			20		940
					94,000

Having said that the northern division exhibits four striking inflexions of the isotheral and isocheimal lines on the same parallel of latitude, corresponding to certain systems of climate, the data from which these results are obtained will now be given; and the results of each year will be presented in detail. To illustrate the difference of temperature, more especially as regards its distribution among the seasons, between the sea-board and the interior remote from large bodies of water, a comparison of the following posts will be instituted:

Fort Sullivan, lat.	44° 41′	Fort Snelling, lat.	44° 53′
" Wolcott, "	41° 30′	Council Bluffs "	41° 25′
Mean East	43° 06′	Mean West	43° 09′

The data given in the following table are contained in the first twelve Abstracts for 1826; and, for brevity's sake, the terms east and west will be used to distinguish the Atlantic and the interior posts, whilst the latitudes given will be regarded as means of the eastern and western posts respectively.—See Table [A] p. 8.

[A]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						31.22	28.17	28.17	35.07	41.82	56.77	62.15	69.61	69.39	62.76	52.18	40.38
						24.98	17.57	19.89	32.15	42.86	69.24	74.22	75.40	72.49	59.03	53.17	38.94
Atlantic	43° 6′	48.18	98	-24	122	29.19			44.55			67.05			51.92		
Interior, remote from Lakes . .	43° 9′	48.83	104	-23	127	20.81			48.08			74.04			50.38		

[B]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						23.41	18.93	17.66	26.32	32.85	50.59	61.14	66.74	63.29	54.84	48.63	35.60
						19.15	13.09	16.15	29.60	37.68	66.76	72.05	73.85	70.24	55.32	49.13	35.29
Fort Mackinac . .	45° 51′	41.67	84	-17	101	20.00			36.59			63.72			46.36		
Fort Snelling . .	44° 53′	44.86	92	-23	115	16.13			44.68			72.05			46.58		

During the winter, the mean of the east is 8.38 *higher* than the west; during the spring, 3.53 *lower*; during the summer, 6.99 *lower*; and during the autumn, 1.54 higher. In the mean temperature for the year there is but a fractional difference. In the extreme range of the thermometer there is a difference of 5°; but an examination of each month shows the range to be much greater at the interior posts remote from the agency of inland seas.

Lest this striking contrast between the mean temperature of winter and that of summer might be ascribed to the *elevation* of the western posts (being 6 or 700 feet above the level of the sea), a comparison between Forts Mackinac and Snelling, the former situated on the Island of Mackinac, and the latter near the junction of the St. Peters and Mississippi Rivers, will be conclusive upon this point. See Table [B] p. 8.

During the winter, the mean of the former, although 1° north, is 3.87 *higher* than the latter; during the spring, 8.09 lower; during the summer, 8.33 *lower;* and during the autumn nearly equal. As these two posts present little difference of elevation above the level of the ocean, and are in comparative proximity, the fact—that the winters are less rigorous and the summers more temperate, on the Great Lakes—is demonstrated to be owing, as on the ocean, to the equalizing agency of large bodies of water.

The Abstracts of 1827 furnish results corroborative of those of the preceding year. In comparing the Atlantic stations with those in the interior remote from inland seas, the following posts are taken:—

Fort Preble,	lat. 43° 38′	Fort Snelling,	lat. 44° 53′
„ Constitution	„ 43° 04′	„ Armstrong	„ 41° 28′
Mean East	43° 21′	Mean West	43° 10′

—See Table [C] p. 10.

During the winter, the mean of the E. is 2.27 *higher* than the W.; during the spring, 3.85 lower; during the summer, 8.26 *lower;* and during the autumn, 1.71 lower. At the W. the mean temperature of the year is 2.88 higher; and the extreme range of the thermometer is 15° greater.

A comparison between Forts Brady and Snelling, in relation to the influence of the Great Lakes, furnishes results confirmatory of those of the preceding year. See Table [D] p. 10.

During the winter, the mean of the former, although 1° 46′ north of the latter, is 1.76 *higher;* during the spring, it is 8.09 lower; during the summer, 9.84 *lower;* and during the autumn, 2.37 lower. At Fort Snelling the mean annual temperature is 4.64 higher, and the extreme range of the thermometer is 14° greater.

[C]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						28.58	20.48	25.72	34.72	47.18	53.99	62.33	68.85	65.90	60.98	50.97	33.21
						20.37	19.50	28.11	36.08	47.97	63.38	72.13	76.22	73.50	64.22	50.76	35.31
Atlantic	43° 21′	46.08	95	-8	103	24.98			45.30			65.69			48.39		
Interior, remote from Lakes . .	43° 10′	48.96	96	-22	118	22.66			49.15			73.95			50.10		

[D]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						20.33	17.36	22.73	25.85	39.39	49.92	59.68	63.60	63.57	58.87	45.12	31.15
						13.01	17.26	24.86	31.74	44.76	62.93	71.95	74.06	70.35	61.02	49.26	31.99
Fort Brady	46° 39′	41.46	84	-20	104	20.14			38.39			62.28			45.05		
Fort Snelling . .	44° 53′	46.10	96	-22	118	18.38			46.48			72.12			47.42		

Having demonstrated three systems of climate, viz.; that of the Atlantic Coast and of the Lakes, which have the extremes of temperature modified, and that of the region beyond the Lakes, characterized by strongly contrasted seasons, it is practicable, this year, by means of the thermometrical observations at West Point, to establish another system of climate. As the climate of the Lakes bears a close similitude to that of the sea-coast, so will this resemble that of the region beyond the Lakes. See Table [E] p. 12.

As West Point, New York, is on the same degree of latitude with Fort Trumbull (New London, Connecticut), and is distant only one and a half degree of longitude, no striking contrast in the results would be, *à priori*, anticipated. It is found, however, that the winters of the former are 4.67 colder, and the summer 1.00 warmer; and that although the mean annual temperature of Fort Trumbull is 1.56 higher, yet the heat is so equably distributed through the seasons that the difference between the mean temperature of winter and summer is only 35.89, whilst that of West Point is 41.56. It is thus seen that the isotheral and isocheimal lines, on leaving the coast, gradually diverge until they come within the influence of the Lakes, when they again converge; and that, having passed beyond the controlling power of these inland seas, their inflexions are once more in adverse directions. Hence it is apparent, that although two places may have the same mean annual temperature, and thus be on the same *isothermal* line; yet, owing to the seasons being nearly uniform or violently contrasted, the climates may be very different.

The Abstracts of 1828 furnish the usual results in regard to the equalizing influence of the Ocean and the Lakes. In the following table, a comparison is made between the same stations as in the prior year. See Table [F] p. 12.

During the winter, the mean of the Atlantic posts is 8.70 higher than that of Forts Snelling and Armstrong; during the spring, it is 2.43 lower; during the summer, 6.90 lower; and during autumn 0.80 higher. In the mean annual temperature, there is but a fractional difference; but the extreme range of the thermometer is 23° greater in the West.

The results obtained from a comparison of Forts Brady and Snelling, confirm the conclusions of prior years. See Table [G] p. 13.

During the winter, the mean temperature of the former is 3.47 higher. than the latter; during the spring, it is 2.75 lower; during the summer, 12.61 lower; and during the autumn, 3.08 lower. At Fort Brady the difference between the mean temperature of winter and summer is 40.79, whilst at Fort Snelling it is 56.87.

Between West Point and Fort Trumbull the comparison is found also to quadrate with the general law.

[E]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						34.95	23.31	31.87	40.58	54.66	61.94	69.27	72.98	72.57	65.48	54.45	37.90
						42.24	27.15	34.73	42.35	53.15	59.00	67.25	73.16	71.39	66.75	58.16	41.85
West Point . . .	41° 22′	51.66	101	–10	111	30.04			52.39			71.60			52.61		
Fort Trumbull . .	41° 22′	53.10	88	0	88	34.71			51.50			70.60			55.59		

[F]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						33.72	28.20	34.61	35.48	43.46	56.05	65.68	70.00	69.51	62.21	49.75	40.99
						29.17	17.35	23.94	33.96	46.64	61.15	73.68	76.62	75.59	59.88	52.20	38.03
Atlantic	43° 21′	48.90	92	–2	94	32.18			44.83			68.40			50.82		
Interior, remote from Lakes . .	43° 10′	49.15	95	–22	117	23.48			47.26			75.30			50.02		

[G]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						23.74	18.43	20.33	28.73	39.35	61.23	52.80	67.20	64.86	54.85	45.53	34.50
						24.87	10.42	16.80	32.24	45.04	60.28	71.82	76.40	74.46	58.83	50.12	35.18
Fort Brady	46° 39′	42.38	91	–20	111	20.83			43.10			61.62			44.96		
Fort Snelling. . .	44° 53′	46.34	92	–22	114	17.36			45.85			74.23			48.04		

[H]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						39.67	33.42	39.39	41.77	47.72	61.76	73.85	75.41	76.58	68.64	55.99	45.03
						45.66	41.86	44.33	43.20	48.86	59.43	70.10	74.57	74.84	69.30	58.04	51.54
West Point . . .	41° 22′	54.96	98	6	92	37.49			50.42			75.28			56.55		
Fort Trumbull .	41° 22′	56.89	86	18	68	43.95			50.50			73.20			59.63		

During the winter, the mean of the latter is 6.46 higher than the former; during the spring, it is 0.08 higher; during the summer, 2.08 lower; and during the autumn, 3.08 higher. At West Point, the range of the mercury is 24° greater than at Fort Trumbull.

The Abstracts of 1829 next come under notice. It will be seen that the data of this year lead to the same unvarying conclusions as in all former calculations. See Table [I] p. 15.

During the winter, the mean of the E. is 7.55 higher than the W.; during the spring, 5.41 lower; during the summer, 8.38 lower; and during the autumn 0.33 higher. On the ocean the range of the thermometer is 28° less than in the opposite locality.

The meteorological report from Fort Brady being imperfect, the usual comparative views are precluded. The establishment of a new post, however, at Houlton, in the interior of Maine, allows a more extended inquiry into the system of climate peculiar to the region lying between the sea-coast and the Lakes. The following posts constitute the points of comparison:—

Fort Preble, Maine	43° 38′	Hancock Barracks, Me.	46° 10′
" Constitution, N. H.	43° 04′	West Point, N. York,	41° 22′
Mean lat.	43° 21′	Mean lat.	43° 46′

—See Table [K] p. 15.

During the winter, the mean of the coast is 4.32 higher than the interior; during the spring, 1.49 lower; during the summer, 0.90 lower; and during the autumn, 1.73 higher. On comparing the posts separately, the difference between the summer and winter temperature becomes more apparent. Thus, at Hancock Barracks, it is 47.49, and at Fort Preble 41.66; and at West Point 41.14, and at Fort Constitution 36.55. The extremes of temperature are also indicated by the range of the thermometer; for, whilst the thermometer at Hancock Barracks rises in the summer to 92°, and sinks in the winter 24° below zero, it attains at the Atlantic posts but the same height, and sinks no lower than 6° minus 0.

Lastly, the Abstracts of 1830, (which year constitutes the limit of the present investigation,) come under review. On a comparison of the Atlantic region with the interior beyond the Lakes, using the data of the same posts as in the preceding year, no variation is presented in the results. See Table [L] p. 16.

During the winter, the mean of the E. is 3.23 higher than the W.; during the spring, 5.60 lower; during the summer, 9.67 lower; and during the autumn, 3.01 lower. At the west, the range of the mercury is 14° greater; and, whilst the difference in the mean temperature of summer and winter is 53° 63′, it is but 40.77 on the Atlantic coast.

Resuming the comparison between Forts Brady and Snelling, the deductions of former years are confirmed. See Table [M] p. 16.

[I]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						39.60	22.59	21.72	31.06	43.96	56.46	63.58	66.85	65.72	55.40	48.37	38.36
						29.84	20.86	9.96	31.21	48.88	67.62	73.88	74.30	73.11	60.35	52.62	28.47
Atlantic	43° 21′	45.71	92	–6	98	27.77			43.83			65.38			47.38		
Interior remote from lakes . . .	43° 10′	47.59	96	–30	126	20.22			49.24			73.76			47.15		

[K]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						34.60	22.54	21.71	31.06	43.96	56.46	63.58	66.86	65.72	55.90	48.37	38.36
						27.45	19.48	18.99	30.06	45.52	60.37	65.68	66.29	66.90	54.95	47.68	34.32
Atlantic	43° 21′	45.72	92	–6	98	26.29			43.83			65.39			47.38		
Interior, &c. . .	43° 46′	44.81	92	–24	116	21.97			45.32			66.29			45.65		

[L']

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						32.90	21.43	22.04	34.74	47.40	53.59	62.59	69.49	66.62	57.91	50.84	45.28
						21.01	18.82	26.99	37.59	53.89,	61.04	71.29	81.51	74.90	60.78	55.87	46.39
Atlantic	43° 21′	47.07	94	–16	110	25.46			45.24			66.23			51.34		
Interior remote from lakes . . .	43° 10′	50.92	98	–26	124	22.27			50.84			75.90			54.35		

[M]

PLACES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						24.66	13.19	18.67	27.92	46.18	48.48	59.35	71.00	62.33	55.22	49.50	44.08
						15.64	14.18	23.60	34.00	51.77	59.70	70.31	81.66	73.21	58.70	54.74	42.79
Fort Brady . . .	46° 39′	43.38	93	–26	119	18.84			40.86			64.23			49.60		
Fort Snelling . .	44° 53′	48.60	94	–26	120	17.81			48.39			75.06			52.08		

During the winter, the mean of the former is 1.03 higher than the latter,—a difference, which would be much increased were November instead of February taken as a winter month; during the spring, the mean is 7.53 lower; during the summer, 10.83 lower; and during the autumn, 2.48 lower. It thus appears that although Fort Brady, situated at the Sault St. Marie, near the outlet of Lake Superior, is 1° 46′ north of Fort Snelling, at the junction of the St. Peter's and the Mississippi, yet there is a difference of nearly 11° in their isotheral lines.

Of the four subdivisions in the northern region of the United States, two are characterized as *modified* climates and two as *excessive*. With the view to test the accuracy of this proposition in a general comparison, one post has been so selected from each system of climate, that the mean latitude shows a difference of but 15′. Thus, the following stations constitute the points of comparison in the subjoined table:—

Fort Brady, 46° 39′	Hancock Barracks, 46° 10′
" Wolcot, 41° 30′	Fort Armstrong, 41° 28′
Mean lat. 44° 04′	Mean lat. 43° 19′

—See Table [N] p. 18.

During the winter, the mean of the former is 4.12 higher than the latter; during the spring, it is 3.97 lower; during the summer, 4.30 lower; and during the autumn there is but a fractional difference. Between winter and spring the modified climate shows a mean difference of 18.49, whilst that of the excessive climate rises to 26.52; and between winter and summer, it is in the former 41.17 and in the latter 49.59. The table indicates little difference in the extreme range of the thermometer; but, on reference to Abstract No. XIII. for 1830, it will be found that Fort Armstrong, the most *southern* post, exhibits the *highest* range. This phenomenon, which is owing to the circumstance that the position is farthest removed from the agency of large seas, shows that latitude alone constitutes a very uncertain index of the character of climate.

The investigation of the northern division will be now concluded, by giving several abstracts, showing the mean result of the five years' observation. The following table affords a condensed view of all the comparisons instituted between the sea-board and the region beyond the Lakes. See Table [O] p. 18.

During the winter, the mean of the former is 6.05 higher than that of the latter; during the spring, 4.13 lower; during the summer, 8.71 lower; and during the autumn, 0.40 lower. As the winters are colder and the summers warmer in the latter region, it is also shown that the extreme range of the thermometer is 12° greater.

[N]

CLIMATES OF OBSERVATION.	Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						31.13	21.33	23.10	32.91	46.36	51.71	61.60	70.67	65.28	57.98	51.96	45.05
						26.08	15.20	21.91	34.32	51.14	57.42	66.51	74.74	70.49	58.42	52.25	44.07
Modified	44° 04′	46.58	93	-26	119	25.18			43.67			66.35			51.66		
Excessive	43° 49′	47.76	98	-24	122	21.06			47.60			70.65			51.57		

[O]

PLACES OF OBSERVATION.	Mean Latitude.	Mean Annual Temperature.	Range of the Thermometer			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						33.20	24.18	26.45	34.21	44.76	55.37	63.26	68.96	67.43	59.85	50.42	39.73
						25.07	18.82	21.78	34.20	48.05	64.49	75.04	76.81	73.92	60.85	52.92	37.43
Sea-coast	43° 18′	47.19	98	-24	122	27.94			44.78			66.55			50.00		
Region beyond the lakes . . .	43° 10′	48.99	104	-30	134	21.89			48.91			75.26			50.40		

Deeming it unnecessary to give the course of the winds and other states of the weather for each year, an abstract for the whole period is now presented.* See Table [P] p. 20.

The ratios between the seasons on the Atlantic coast and the interior remote from large bodies of water, based on five years' observation, have been thus reduced to numerical expressions. Although fair weather prevails in both regions, a marked difference obtains in regard to the relative proportion. On the sea-coast, the annual ratio of fair days is 202, and in the opposite locality 240; the cloudy days are as 108 to 77; the rainy days are as 45 to 31; and those of snow are as 9 to 16. These ratios, far from being accidental, result from the operation of fixed laws. As the annual quantity of rain depends upon the amount of evaporation, it increases, as a general rule, in proportion as the equator is approached; and in regard to the seasons, the greatest amount falls when the mean monthly temperature is highest. As this augmented quantity in warm maritime countries falls at a particular season, and in a shorter space of time, than in colder regions, the annual number of dry days, particularly in inland districts, is proportionally increased. On the contrary, in the cold or temperate maritime localities now under consideration, different results follow. Although much less in annual quantity than in warmer regions, the rain descends much more frequently, but in slighter showers; and hence, a ready explanation is afforded of the fact, that the number of wet and foggy days on the New England coast is one-half greater than in the dry and cold region beyond the Lakes. Humboldt has given the following table as the proportional quantity of rain in different latitudes:—

Lat.	Mean annual depth of rain.
0	96 inches
19	80 "
45	29 "
69	17 "

In regard to a particular locality, much will also depend upon the prevailing winds; for it has been observed that the number of days in a year during which the winds blow from a certain point of the compass, at a given place, preserves a constant ratio. This follows from the fact that the force and direction of winds depend on general causes, such as the declination of the sun, the configuration of the coast, and the position of neighbouring continents. This fact is illustrated throughout the Abstracts generally. By way of example, the results of three years' observation at Fort Gibson, are annexed. See Table [Q] p. 20.

* As the proportion of winds and weather, throughout all the Abstracts, is calculated for the average of a month, the result for a year may be readily determined.

[P]

PLACES OF OBSERVATION.	Mean Latitude.	WINDS.									WEATHER.				
		N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cloudy.	Rain.	Snow.	Prevailing.
		Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
Sea-coast	43° 18′	1.71	5.46	3.47	1.69	2.35	6.36	5.23	4.25	S.	16.89	9.09	3.77	0.79	Fair.
Region beyond the lakes	43° 10′	3.89	3.30	1.51	2.00	2.88	7.16	4.19	6.07	S.	20.04	6.46	2.60	1.36	Fair.

[Q]

FORT GIBSON.	WINDS.									WEATHER.				
	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cloudy.	Rain.	Snow.	Prevailing.
	Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
1828	2.08	3.25	1.67	1.50	20.42	0.50	1.00	0.08	S.E.	19.00	9.25	2.08	0.17	Fair.
1829	2.67	3.08	4.83	1.58	13.50	1.17	2.58	1.00	S.E.	18.92	6.67	4.50′	0.18	Fair.
1830	1.75	3.08	4.92	2.83	15.00	0.83	1.42	0.58	S.E.	19.17	6.67	4.17	0.42	Fair.

Comparing the seaboard with inland localities remote from Lakes, the contrast in the seasons of winter, spring, and summer, is very remarkable; and the influence of this difference of climate upon the animal economy and the vegetable kingdom, is no less striking; for, as Baron Humboldt remarks,—"a summer of uniform heat excites less the force of vegetation, than a great heat preceded by a cold season."

The following abstract furnishes a condensed view of the numerical results obtained from the preceding annual comparisons between localities in the interior,—the one being under, and the other without, the equalizing influence of inland seas. See Table [R] p. 22.

Fort Snelling, near the junction of the St. Peter's and the Mississippi, constitutes the latter place of observation, and the other point is a mean between Forts Brady and Mackinac, the former situated near the outlet of Lake Superior and the latter on the island of Mackinac. Three years' observations were made at the former and one at the latter. Although the latitude on the Lake is 1° 34′ north of the other, and presents a mean annual temperature 4.25 lower, yet the mean winter temperature is 2.54 *higher;* during the spring, the mean temperature is 6.65 *lower;* during the summer, it is 10.40 *lower;* and during the autumn, 2.04 lower. These ratios show a contrast in the seasons no less striking than that exhibited on a comparison with the Atlantic coast. No objection can be urged against this comparative view on the ground of relative elevation, as Fort Brady is 595 feet, and Fort Mackinac 728 feet,* and Fort Snelling 780 feet above the level of tide water.

The following tabular statement of the course of the winds and the state of weather, based on the same years of observation as the abstract just given, will determine whether the agency of the Lakes induces the same meteorological relations, in this respect, as the ocean. See Table [S] p. 22.

On the Lakes, the annual ratio of fair days is 117, and in the opposite locality, 215; the cloudy days are as 127 to 73; the rainy, as 63 to 46; and the snowy as 45 to 29. In the former, the prevailing weather is cloudy, and in the latter it is fair. The ratio of cloudy days is even higher on the Lakes than on the Atlantic coast. As it is of great importance to determine the annual quantity of rain which falls on any point of the earth's surface, it is much to be regretted that more extensive observations have not been made at these posts on the pluviometer.†

* Fort Mackinac is elevated 150 feet above the surface of the Lake.

† Vide Note at end of "Remarks."

[R]

CLIMATES OF OBSERVATION.	Mean Latitude.	Mean Annual Temperature.	Range of the Thermometer.			WINTER.			SPRING.			SUMMER.			AUTUMN.		
						Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
						23.04	16.98	19.85	27.20	39.44	52.56	58.24	67.13	63.51	55.94	47.19	36.33
						18.17	13.74	20.35	31.90	44.81	62.42	71.53	76.49	72.07	58.47	50.81	36.31
Inland seas	46° 27′	42.22	93	-26	119	19.96			39.73			62.96			46.49		
Remote from seas	44° 53′	46.47	96	-26	122	17.42			46.38			73.36			48.53		

[S]

PLACES OF OBSERVATION.	Mean Latitude.	WINDS.									WEATHER.				
		N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cloudy.	Rain.	Snow.	Prevailing.
		Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
Inland seas	46.27	2.39	5.81	3.16	4.56	4.49	2.46	3.58	3.99	N.W.	9.79	11.58	5.27	3.79	Cl'dy.
Remote from seas	44.53	1.46	3.73	1.02	1.31	2.83	4.65	6.68	8.75	W.	17.96	6.15	3.89	2.44	Fair.

The meteorological phenomena of Canada, Nova Scotia, New Brunswick, and Newfoundland, according to the observations of the British Army Surgeons, are in perfect harmony with the laws just illustrated. In Canada, the climate exhibits such sudden alternations of temperature that the mercury at Quebec has been known to fall 70° in the course of 12 hours. Cold weather sets in as early as November, from the end of which month till May the ground remains covered with snow to the depth of three or four feet. When the winds blow with violence from the North-east, the cold become so excessively intense, that the mercury congealed in the thermometer serves no longer to indicate the reduction of temperature. During winter, the general range is from the freezing point to 30° below zero. The seasons do not, as in more temperate regions, glide imperceptibly into each other. In June, July, and August, the heat, which often attains 95° of Fah., is frequently as oppressive as in the West Indies.

The climate of Nova Scotia, although in similar latitudes, exhibits a striking contrast to that of Canada. The temperature is not only modified by its insular position, but the interior of the peninsula "is so much intersected by lakes and bays, that nearly one-third of its surface is under water." The thermometer seldom rises above 88° in summer, or sinks lower than 6° or 8° below zero in winter. Were it practicable to obtain the requisite data, it would be interesting to institute a comparison between the seasons of this region and those of Canada.

The climate of Newfoundland is similar to that of Nova Scotia. The summers, however, owing to the meeting of the icebergs on the coast, are less warm, of shorter duration, and subject to more sudden vicissitudes.

Having illustrated rather minutely the several systems of climate pertaining to the northern division, the necessity of similar details in reference to the other two divisions is superseded. It is the more unnecessary, as Abstracts A, B, C, appended to these "Remarks," will enable one at a glance to trace out the meteorological relations of any region of the United States. The first exhibits the mean temperature of each month, each season and the whole year; the second shows the difference between the mean temperature of each month and season; and the third contains the annual and monthly ranges of temperature. It will be found that the same laws prevail in the middle region of the United States as in the northern, viz., that the seasons grow less uniform in proportion as we recede from the sea-coast. Thus, Washington City and Fortress Monroe, on the one hand, show less difference between the mean temperature of summer and winter than Jefferson Barracks and Fort Gibson on the other; and in examining the annual range of the thermometer and the mean of the monthly ranges, similar contrasts are revealed. No reference was made to the latter mode of comparison in investigating the four systems of climate of the northern division. On applying the rule, however, it

will be found that every principle in relation to modified and excessive climates is happily confirmed. On approaching the southern coast, climate undergoes a striking modification. The seasons glide imperceptibly into each other, exhibiting no great extremes; thus, at Fort Snelling the difference between the mean temperature of the warmest and coldest month is 61° 18', whilst at Cantonment Brooke, it is no more than 17° 68'. The Peninsula of Florida, however, is wholly peculiar in this respect; the course of vegetable life is unceasing: wild flowers spring up and flourish in the month of January; and so little is the temperature of the lakes and rivers diminished during the winter months, that one may almost at any time bathe in their waters.

The most prominent features of climate exhibited throughout the United States have thus been referred to in a general way. As these systems of climate consist of numerous subdivisions, which can be determined only by observation, a *comparative* view of them remains a desideratum; but the hope may be indulged, from present indications, that materials will in a few years be furnished for the composition of a complete meteorological chart, in which they may be systematically arranged.

The following tabular statement shows the mean annual temperature of various places, and the number of years upon which the results are based, with their locality, latitude, longitude, and height above the level of the sea. The table extends over a period of eleven years, but it does not perhaps embrace a moiety of the results that may be obtained from the observations of the same period. The elevation of some interior posts above tide-water, could not be ascertained, whilst the heights of those given are merely approximations:—

[T]

No.	PLACES OF OBSERVATION.	POSITION. Lat.	Long.	No. of ft. ab'e the level of ocean.	No. of years of observ.	Mean annual temp.
1	Fort Brady (*outlet of L. Superior*)	46°39′	84°43′	595	6	41°89′
(2)	Hancock Barracks (*Me.*)	46 10	67 50		2	41 21
2	Fort Mackinac (*Isle of Mackinaw*)	45 51	85 05	728	9	40 56
3	„ Snelling (*near the junction of St. Peter's and Mississippi*)	44 53	93 08	780	10	45 34
4	„ Sullivan (*Eastport, Me.*)	44 44	67 04		5	42 97
5	Plattsburgh (*L. Champlain*)	44 41	73 26		1	47 01
6	Fort Howard (*Green Bay*)	44 40	87 00	600	9	44 93
7	Madison Barracks, Sackett's Harbour (*L. Ontario*)	43 57	76 04	250	1	48 60
8	Fort Preble (*Portland, Me.*)	43 38	70 18		5	46 34
9	„ Niagara (*Youngstown, N. Y.*)	43 15	79 05	250	2	51 69
10	„ Constitution (*Portsmouth, N.H.*)	43 04	70 49		4	47 21
11	„ Crawford (*Prairie du Chien, Wiscon.*)	43 03	90 53	580	4	45 65
12	„ Independence (*Boston*)	42 22	71 02		1	46 24
13	„ Wolcott (*Newport, R. I.*)	41 30	71 18		10	50 55
14	„ Armstrong (*Rock Island, Ill.*)	41 28	90 33		4	51 63
15	Council Bluffs (*near the junction of Platte and Missouri*)	41 45	96 00	800	6	50 50
16	West Point (*N. Y.*)	41 22	73 57		4	52 47
17	Fort Trumbull (*N. London, Con.*)	41 22	72 05		2	55 00
18	„ Columbus (*N. Y. Harbour*)	40 42	74 02		9	53 00
19	Alleghany Arsenal (*Pittsburgh*)	40 26	80 02	704	1	53 69
20	Fort Mifflin (*near Philadelphia*)	39 51	75 12		2	55 28
21	„ Delaware (*near New Castle*)	39 35	75 29		1	56 71
22	„ Severn (*Annapolis, Md.*)	38 58	76 27		2	56 40
23	Washington (*D. C.*)	38 53	76 55		8	56 57
24	Fort Washington (*Md.*)	38 41	76 58		1	58 02
25	Jefferson Barracks (*Mo.*)	38 28	90 08		4	58 14
26	F's Monroe (*Old Point Comfort, Va.*)	37 02	76 12		5	61 43
27	Fort Norfolk (*Va.*)	36 51	76 11		1	63 28
28	„ Gibson (*Arkansas.*)	35 47	95 10		3	62 90
29	„ Johnston (*Coast of N. C.*)	34 00	78 05		7	66 89
30	Augusta Arsenal (*Ga.*)	33 28	81 53		5	66 01
31	Fort Moultrie (*Charleston Harbour*)	32 42	79 56		3	64 49
32	„ Jesup (*near Sabine River, La.*)	31 30	93 47		8	67 94
33	Cantonment Montpelier (*Ala.*)	31 11	87 57		1	67 47
34	Fort Scott (*Ga.*)	30 49	84 47		1	68 54
35	Fernandina (*Amelia Island*)	30 40	81 37		2	70 06
36	Baton Rouge (*La.*)	30 26	91 18		1	68 07
37	Canton. Clinch (*near Pensacola*)	30 24	87 14		7	69 44
38	Petite Coquille (*near N. Orleans*)	30 10	89 38		4	71 25
39	Fort Gadsden (*Fl.*)	29 56	85 05		1	69 54
40	New Orleans (*La.*)	29 57	90 14		1	72 36
41	Fort Marion (*St Augustine, Fl.*)	29 50	81 27		4	72 49
42	„ St. Philip (*La.*)	29 29	89 71		1	70 45
43	Cant. Brooke (*Tampa Bay, Fl.*)	27 57	82 35*		5	72 80

* These degrees of latitude and longitude are in most cases merely approximations.

A reference to abstracts A, B, C, giving the ratios of the mean temperature of months and seasons, and to the tables comparative of positions on the Atlantic, the Lakes, and in the interior remote from such agencies, will illustrate pretty fully the diversities of our climate.

Although the extremes of annual temperature may occur at our most northern and southern posts, yet we do not there find the extremes of heat and cold. The tabular statement exhibiting the hottest and coldest day in each year, from 1820 to 1830, inclusive, given below, establishes this position. See table [U] p. 27. As the western posts, Snelling, Gibson, Council Bluffs, &c., remote from inland seas, are remarkable for extremes of winter and summer, so do they exhibit the hottest and coldest days and the greatest range of the thermometer. Forts Brady and Mackinac, the most northern stations, show, by a lesser range of the thermometer, the equalizing influence of the Lakes; whilst the Atlantic posts illustrate the controlling power of the ocean. In elucidation of the same law, we find that the mean summer temperature is greater at Augusta, Ga., than at St. Augustine or Tampa Bay, Florida. A reference to the subjoined tabular review, and to Abstracts A, B, C, showing the numerical ratios of the mean temperature of each month and season, and the annual and monthly ranges of temperature, will exhibit in strong contrast the diversities in these *particular systems* of climate. In Africa, the mercury is sometimes seen at 125°, and in British India it is said to have been as high as 130°. In the table of the highest temperature observed in different climates, as given by M. Arago, it is noted at 130° in the Oasis of Mourzouk. In our own Diaries, it is marked at 116°, on the 15th August, 1834, at Fort Gibson.* As no register-thermometers have been used at our posts, the range throughout the 24 hours may be greater than that given in the Diaries. The interor posts remote from Lakes, are denoted in the subjoined table [U] by an asterisk; whilst those on lakes, or the sea-board and its vicinity, are without any sign.

This table confirms the position that extremes of temperature are found as we approach the interior of a continent, unless modified by inland seas. Even along our southern coast the extreme of heat is less than on our more northern sea-board. The United States, it has been seen, present numerous *systems of climate* in which the division of the annual heat among the different seasons exhibits remarkable diversity.

* According to Assistant Surgeon J. B. J. Wright.

PLACES OF OBSERVATION.	Lat.	Lowest degree.	Highest degree.
1820.			
*Fort Snelling	44°53′	–30	93
Portsmouth (*N. H.*)	43 04	–3	94
*Prairie du Chien (*Wi.*)	43 03	–23	99
Boston Harbour	42 22	–1	98
*Council Bluffs	41 25	–22	105
New London (*Con.*)	41 22	8	88
Fort Johnston (*N. C.*)	34 00	28	90
New Orleans	29 57	35	92
1821.			
*Fort Snelling	44 53	–32	92
Portland (*Me.*)	43 38	–18	94
Portsmouth (*N. H.*)	43 04	–12	90
*Prairie du Chien (*Wi.*)	43 03	–36	91
Boston Harbour	42 22	–10	99
*Fort Armstrong (*Ill.*)	41 28	–28	94
*Council Bluffs	41 25	–13	100
Fort Johnston (*N. C.*)	34 00	30	89
Fort St. Philip (*La.*)	29 29	32	92
1822.			
*Fort Snelling	44 53	–29	92
Portland (*Me.*)	43°38′	–10	96
Portsmouth (*N. H.*)	43 04	–7	86
*Prairie du Chien	43 03	–22	94
*Fort Armstrong (*Ill.*)	41 28	–15	94
Boston Harbour	42 22	–7	92
*Council Bluffs	41 25	–17	108
Fort Johnston (*N. C.*)	34 00	26	90
Cant. Clinch (*n'r Pens.*)	30 24	20	93
1823.			
Fort Brady	46 39	–30	90
*Fort Howard (*Wis.*)	44 40	–38	100
Eastport (*Me.*)	44 44	–10	90
Boston Harbour	42 22	–3	97
*Council Bluffs	41 25	–16	102
N. York Harbour	40 42	3	91
Charleston Harbour	32 42	19	89
Cant. Clinch (*n'r Pens.*)	30 24	11	94
1824.			
Fort Brady	46 39	–33	84
*Fort Snelling	44 53	–27	
Eastport (*Me.*)	44°44′	–19	86
*Prairie du Chien	43 03	–28	96
Boston Harbour	42 22	–8	90
*Council Bluffs	41 25	–21	103
N. York Harbour	40 42	2	96
Charleston Harbour	32 42	24	91
Cant. Clinch (*n'r Pens.*)	30 24	24	95
1825.			
Fort Brady	46 39	–21	89
Eastport (*Me.*)	44 44	–5	94
*Fort Howard	44 40	–25	100
Boston Harbour	42 22	–5	98
*Council Bluffs	41 25	–11	102
N. York Harbour	40 42	–3	104
Charleston Harbour	32 42	28	94
St. Augustine	29 50	42	94
1826.			
Fort Brady	46 39	–37	—
*Fort Mackinac	45 51	–31	82

REMARKS.

☞Eastport is north of Fort Howard.

☞Boston is north of Fort Howard.

MONTHLY ABSTRACTS.

No. I. JANUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'y.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	16.96	21.19	18.64	18.93	40	-17	57	6	4	2	1	2	8	-	8	S.	8	8	4	11	Cl'dy.
Fort Snelling	10.19	15.12	13.96	13.09	42	-23	65	-	3	-	2	4	4	8	10	W.	18	5	2	6	Fair.
Fort Sullivan	20.80	26.54	22.16	23.17	44	-24	68	5	5	2	2	-	3	4	10	W.	14	13	1	3	Cl'dy.
Fort Howard	18.41	21.74	17.41	19.19	47	-20	67	-	5	-	-	-	-	21	5	S.W.	15	10	2	4	"
Fort Wolcott	29.32	34.74	35.41	33.16	50	2	48	1	11	2	-	4	-	10	3	N.W.	14	10	5	2	"
Council Bluffs	15.48	31.16	19.51	22.05	60	-16	76	16	1	2	1	-	8	2	1	N.	18	13	-	-	Fair.
Fort Columbus	25.77	32.58	28.32	28.89	48	-1	49	-	13	3	1	1	2	6	5	N.W.	16	5	7	3	"
Fort Delaware	32.25	39.93	33.28	35.15	62	8	54	-	14	10	-	1	-	6	-	N.W.	24	5	1	1	"
Washington city	31.00	41.00	35.00	35.66	60	0	60	-	8	7	-	3	3	6	4	N.W.	22	4	3	2	"
Fortress Monroe	40.90	46.29	43.48	43.55	62	21	41	1	8	4	4	2	-	9	3	S.W.	17	9	4	1	"
Fort Johnston	44.16	50.61	47.64	47.47	67	30	37	5	14	1	3	-	4	1	3	N.W.	19	6	6	-	"
Augusta Arsl.	46.12	50.58	49.03	48.57	64	28	36	-	5	-	8	1	1	8	8	S.W.	13	10	7	1	Cl'dy.
Canton. Jesup	44.03	47.39	49.03	46.82	78	14	64	8	3	-	2	5	4	3	6	N.	18	2	10	1	Fair.
Canton. Clinch	47.51	55.93	50.92	51.45	68	24	44	-	10	1	2	6	5	7	-	N.W.	19	2	8	2	"
New Orleans	45.25	60.87	53.48	53.20	77	25	52	6	2	6	4	9	-	3	1	E.	19	5	7	-	"
St. Augustine	54.74	59.10	56.22	56.48	67	44	23	-	2	18	-	3	-	2	6	N.E.	17	11	3	-	"
Canton. Brooke	53.09	64.64	54.19	57.31	80	40	40	-	9	-	5	2	1	7	7	N.W.	25	3	3	-	"

No. II.

FEBRUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	13.67	21.92	17.39	17.66	38	-8	46	4	5	-	1	2	4	1	11	W.	14	6	1	7	Cl'dy.
Fort Snelling	8.92	26.07	13.46	16.15	50	-20	70	-	5	-	-	1	7	12	3	S.W.	16	4	1	7	Fair.
Fort Sullivan	18.46	27.50	22.21	22.72	48	-20	68	-	5	5	1	1	2	6	8	W.	12	11	2	3	Cl'dy.
Fort Howard	14.96	26.42	15.17	18.85	46	-32	78	2	4	1	-	-	2	16	3	S.W.	17	7	-	4	Fair.
Fort Wolcott	31.39	36.00	33.50	33.63	53	7	46	-	9	4	1	4	-	9	1	N.W.	12	3	10	3	Cl'dy.
Council Bluffs	14.46	35.21	21.25	23.64	58	-10	68	12	1	-	2	2	8	2	1	N.	21	3	-	4	Fair.
Fort Columbus	27.17	35.25	31.51	31.31	55	1	54	3	6	4	1	-	3	5	6	N.W.	14	5	5	4	Equal.
Fort Delaware	31.71	43.92	35.65	37.09	56	20	36	-	9	6	-	2	-	11	-	S.W.	10	11	7	-	"
Washington city	36.00	47.00	41.00	41.33	68	11	57	2	4	6	-	3	1	12	-	S.W.	18	6	4	-	Fair.
Fortress Monroe	45.14	51.75	47.82	48.23	63	32	31	1	3	3	5	8	1	7	-	S.E.	14	4	10	-	Equal.
Fort Johnston	52.92	58.98	57.25	56.38	70	42	28	7	5	1	2	1	5	-	7	N.	10	11	7	-	"
Augusta	51.64	59.64	57.35	56.21	76	37	39	2	2	2	6	4	-	5	7	W.	17	5	6	-	Fair.
Canton. Jesup	47.39	66.21	59.67	57.76	79	28	51	7	1	6	4	5	2	2	1	N.	18	-	10	-	"
Canton. Clinch	54.60	62.75	58.78	58.71	72	38	34	-	6	2	2	12	3	3	-	S.E.	10	5	13	-	Cl'dy.
New Orleans	58.25	68.78	62.67	63.27	84	42	42	1	3	8	5	2	2	2	5	S.E.	13	15	-	-	"
St. Augustine	63.21	67.14	64.60	64.98	77	52	25	4	1	9	1	5	3	-	5	N.E.	18	5	5	-	Fair.
Canton. Brooke	62.28	77.50	68.85	69.54	88	58	30	-	5	1	8	6	2	3	3	E.	25	-	3	-	"

No. III. MARCH.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	23.22	29.93	25.83	26.32	41	-8	49	7	2	10	7	1	2	1	1	N.E.	12	11	1	7	Cl'dy.
Fort Snelling	21.32	39.19	28.29	29.60	56	-4	60	1	3	-	2	8	4	2	11	W.	16	5	2	8	Fair.
Fort Sullivan	27.35	36.83	29.32	31.17	49	9	40	1	8	2	6	2	3	3	6	N.W.	12	15	2	2	Cl'dy.
Fort Howard	22.09	38.93	27.16	29.39	56	0	56	-	-	23	-	-	-	6	2	N.E.	14	10	2	5	"
Fort Wolcott	34.58	44.29	38.06	38.98	60	17	43	3	10	6	1	6	-	5	-	N.W.	11	9	11	-	"
Council Bluffs	28.77	41.80	33.55	34.71	70	6	64	12	2	5	1	4	6	-	1	N.	15	10	3	3	"
Fort Columbus	33.32	42.77	36.93	37.67	67	17	50	-	12	1	7	-	6	3	2	N.W.	14	4	12	1	"
Fort Delaware	35.41	47.09	36.00	39.50	54	30	24	-	3	5	-	11	-	12	-	S.W.	11	9	10	1	"
Washington city	43.00	55.00	49.00	49.00	78	36	42	1	11	14	-	2	3	-	-	N.E.	20	5	6	-	Fair.
Fortress Monroe	52.16	58.38	54.09	54.87	73	39	34	7	-	6	3	6	1	6	2	N.	14	9	8	-	Cl'dy.
Fort Johnston	60.12	65.87	63.25	63.08	78	42	36	11	4	-	-	1	8	3	4	N.	20	5	6	-	Fair.
Augusta Arsl.	61.77	69.61	66.25	65.87	80	44	36	2	1	2	4	1	5	13	3	S.W.	25	3	3	-	"
Canton. Jesup	63.16	75.70	66.61	68.49	88	40	48	3	7	7	4	9	-	1	-	S.E.	19	12	-	-	"
Canton. Clinch	62.93	72.00	67.25	67.46	76	48	28	2	8	-	-	7	10	4	-	S.	21	-	10	-	"
New Orleans	67.29	76.58	68.25	70.71	82	52	30	5	1	1	8	8	6	2	-	E.	19	7	5	-	"
St. Augustine	68.61	73.19	70.09	70.63	78	59	19	-	2	12	-	9	-	3	5	N.E.	25	4	2	-	"
Canton. Brooke	68.20	81.03	69.48	72.90	88	54	34	-	4	7	2	5	1	8	4	S.W.	28	-	3	-	"

No. IV. APRIL.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	29.80	36.23	32.53	32.85	46	10	36	4	3	3	6	-	4	2	8	W.	11	7	8	4	Cl'dy.
Fort Snelling	31.90	45.93	35.20	37.68	60	4	56	-	1	-	5	4	1	9	10	W.	14	9	4	3	"
Fort Sullivan	35.14	47.80	35.90	39.61	60	16	44	3	8	-	2	-	9	3	5	S.	16	13	1	-	Fair.
Fort Howard	30.10	52.03	36.40	39.51	68	4	64	-	-	7	1	-	-	21	1	S.W.	14	11	4	1	Cl'dy.
Fort Wolcott	39.50	49.20	42.60	44.03	64	21	43	-	12	5	-	5	-	8	-	N.W.	13	7	6	4	"
Council Bluffs	40.86	57.00	46.00	47.95	88	13	75	9	6	-	-	3	11	-	1	S.	11	14	4	1	"
Fort Columbus	38.26	49.23	42.33	43.27	63	20	43	2	7	3	3	5	5	5	-	N.W.	13	11	4	2	"
Fort Delaware	42.13	55.86	39.33	45.77	70	26	44	1	9	1	-	5	-	14	-	S.W.	21	7	1	1	Fair.
Washington city	47.66	59.83	52.60	53.36	81	31	50	4	7	8	-	3	4	3	1	N.	17	5	7	1	"
Fortress Monroe	54.23	59.66	56.00	56.63	76	34	42	2	2	2	7	7	4	3	3	E.	18	6	6	-	"
Fort Johnston	63.46	68.86	66.55	66.29	79	46	33	8	3	1	-	-	13	2	3	S.	22	5	3	-	"
Augusta Arsl.	64.00	71.60	68.69	68.09	84	51	33	-	1	1	4	3	4	9	8	S.W.	21	4	5	-	"
Canton. Jesup	65.46	76.90	68.33	70.23	88	40	48	5	4	8	3	9	1	-	-	S.E.	17	6	7	-	"
Canton. Clinch	67.33	74.73	70.10	70.72	82	44	38	-	5	-	-	6	2	17	-	S.W.	23	-	7	-	"
New Orleans	70.16	78.23	69.23	72.54	88	52	36	3	2	5	9	3	2	3	3	E.	16	12	2	-	"
St. Augustine	72.93	76.40	73.23	74.19	84	60	24	1	-	10	3	3	1	9	2	N.E.	24	4	2	-	"
Canton. Brooke	67.80	83.06	73.46	74.77	86	62	24	-	3	4	6	5	1	1	10	W.	26	3	1	-	"

No. V. MAY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	48.12	53.45	50.22	50.59	70	32	38	2	1	-	13	-	4	2	9	E.	15	4	12	-	Cl'dy.
Fort Snelling	63.51	74.38	62.38	66.76	89	36	53	-	1	-	1	7	11	7	4	S.	21	-	10	-	Fair.
Fort Sullivan	48.77	66.22	46.90	53.96	90	38	52	2	4	-	6	1	11	5	2	S.	22	6	3	-	"
Fort Howard	52.06	76.61	58.38	62.35	94	36	58	-	-	15	-	-	-	16	-	S.W.	16	10	5	-	"
Fort Wolcott	54.54	66.03	58.16	59.58	76	44	32	-	4	3	-	5	-	18	1	S.W.	16	13	2	-	"
Council Bluffs	62.97	83.45	68.74	71.72	98	44	54	2	1	1	1	2	23	1	-	S.	20	10	1	-	"
Fort Columbus	59.12	74.96	60.58	64.88	91	44	47	1	1	-	2	3	19	5	-	S.	26	5	-	-	"
Fort Delaware	65.13	78.45	64.82	69.46	89	54	35	-	3	-	-	5	1	21	1	S.W.	26	2	3	-	"
Washington city	64.16	81.64	74.48	73.42	93	56	37	1	6	6	1	5	3	7	2	S.W.	22	5	4	-	"
Fortress Monroe	68.80	74.83	71.09	71.57	84	58	26	1	-	3	2	9	4	7	5	S.E.	19	9	3	-	"
Fort Johnston	72.19	78.29	72.54	74.34	82	64	18	8	1	1	-	-	8	5	8	S.	27	3	1	-	"
Augusta Arsl.	71.29	81.93	79.16	77.46	90	61	29	2	3	3	1	5	3	14	-	S.W.	26	-	5	-	"
Canton. Jesup	75.41	83.67	74.64	77.91	91	56	35	-	2	2	4	6	12	5	-	S.	19	2	10	-	"
Canton. Clinch	73.80	83.06	77.38	78.08	92	66	26	-	3	4	-	5	9	10	-	S.W.	24	1	6	-	"
New Orleans	71.12	85.45	76.25	77.61	92	62	30	6	1	4	4	4	8	3	1	S.	27	4	-	-	"
St. Augustine	77.19	80.41	77.19	78.26	84	75	9	2	4	11	1	9	-	4	-	N.E.	27	2	2	-	"
Canton. Brooke	75.67	87.35	76.19	79.74	90	62	28	-	1	3	11	7	3	2	4	E.	23	-	8	-	"

No. VI.

JUNE.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	57.46	66.30	59.76	61.14	84	48	36	3	2	-	10	-	4	-	11	W.	11	7	12	-	Rain.
Fort Snelling	71.13	78.53	66.50	72.05	92	56	36	1	3	-	2	3	5	5	11	W.	14	6	10	-	Cl'dy.
Fort Sullivan	54.93	72.13	53.16	60.07	85	45	40	1	4	2	2	1	11	9	-	S.	23	6	1	-	Fair.
Fort Howard	58.63	82.10	62.93	67.89	98	44	54	1	-	14	-	-	-	14	1	S.W.	14	11	5	-	Cl'dy.
Fort Wolcott	61.43	68.66	62.63	64.24	82	51	31	-	1	5	1	4	-	19	-	S.W.	13	5	12	-	„
Council Bluffs	69.06	88.13	71.90	76.40	99	58	41	4	5	5	1	3	10	2	-	S.	23	5	2	-	Fair.
Fort Columbus	66.66	76.56	66.00	69.77	95	51	44	-	3	3	4	7	3	8	2	S.W.	17	8	5	-	„
Fort Delaware	70.23	86.56	72.90	76.56	94	66	28	-	1	5	2	7	4	8	3	S.W.	15	7	8	-	Equal.
Washington city	69.23	85.66	74.66	76.51	95	64	31	2	3	8	-	3	2	11	1	S.W.	14	10	6	-	Cl'dy.
Fortress Monroe	75.86	81.00	77.20	78.02	90	69	21	-	2	2	4	13	2	6	1	S.E.	17	7	6	-	Fair.
Fort Johnston	79.03	83.73	81.10	81.28	86	71	15	7	5	-	-	-	16	1	1	S.	27	2	1	-	„
Augusta Arsl.	76.66	87.43	73.70	79.26	94	70	24	-	8	2	-	2	3	14	1	S.W.	17	1	12	-	„
Canton. Jesup	76.66	85.66	77.13	79.82	90	71	19	-	2	6	8	4	4	6	-	E.	18	2	10	-	„
Canton. Clinch	77.83	82.26	79.80	79.96	90	74	16	2	4	3	-	1	1	18	1	S.W.	11	-	19	-	Rain,
New Orleans	82.40	87.40	79.93	83.24	93	75	18	5	3	2	3	4	5	4	4	S.	21	7	2	-	Fair.
St. Augustine	81.40	84.16	81.26	82.27	92	80	12	-	4	17	-	6	2	1	-	N.E.	20	3	7	-	„
Canton. Brooke	77.80	88.53	71.00	79.11	90	74	16	-	3	-	8	3	8	7	1	E.	10	2	17	1	Rain.

No. VII. JULY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	63.54	71.87	64.90	66.74	82	54	28	4	6	2	-	1	6	3	9	W.	20	3	8	-	Fair.
Fort Snelling	72.35	80.71	68.48	73.85	90	57	33	1	2	-	-	1	6	12	9	S.W.	21	3	7	-	"
Fort Sullivan	59.67	80.80	60.83	66.90	98	52	46	3	2	-	-	-	23	-	3	S.	22	9	-	-	"
Fort Howard	61.12	84.90	66.19	70.74	100	48	52	-	-	12	1	-	-	18	-	S.W.	25	4	2	-	"
Fort Wolcott	68.90	77.16	70.93	72.33	85	61	24	2	2	6	-	3	-	18	-	S.W.	19	6	6	-	"
Gouncil Bluffs	70.25	87.93	72.67	76.95	104	60	44	3	6	-	-	4	15	1	2	S.	19	10	2	-	"
Fort Columbus	71.96	84.96	70.90	75.94	97	62	35	2	8	3	-	1	-	14	3	S.W.	27	-	4	-	"
Fort Delaware	75.29	80.64	77.25	77.72	89	70	19	-	4	5	-	6	6	8	2	S.W.	16	6	9	-	"
Washington city	69.45	87.35	75.64	77.48	95	58	37	4	10	4	-	5	2	6	-	N.W.	17	10	4	-	"
Fortress Monroe	77.74	82.90	79.32	79.98	91	71	20	-	2	2	4	11	1	10	1	S.E.	23	2	6	-	"
Fort Johnston	79.58	83.87	81.38	81.61	88	74	14	-	2	2	4	11	1	10	1	S.E.	23	2	6	-	"
Augusta Arsl.	77.70	87.93	84.29	83.30	94	71	23	-	1	3	4	6	6	11	-	S.W.	11	10	10	-	Cl'dy.
Canton. Jesup	80.80	89.74	85.80	85.45	97	69	28	1	2	5	3	7	6	5	2	S.E.	24	3	4	-	Fair.
Canton. Clinch	80.06	87.09	81.48	82.88	93	76	17	1	3	5	1	4	3	12	2	S.W.	17	2	12	-	"
New Orleans	83.87	89.67	81.87	85.14	96	78	18	6	2	3	8	2	6	-	4	E.	14	17	-	-	Cl'dy.
St. Augustine	83.06	86.48	82.96	84.16	92	78	14	-	4	17	-	5	1	4	-	N.E.	20	7	4	-	Fair.
Canton. Brooke	78.45	87.74	78.45	81.55	92	72	20	-	1	2	-	4	6	9	9	S.W.	19	1	11	-	"

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	60.74	68.48	60.64	63.29	82	50	32	3	3	3	3	5	5	3	6	W.	18	2	11	-	Fair.
Fort Snelling	69.51	76.54	64.67	70.24	87	54	33	-	6	-	-	5	3	8	9	W.	17	7	7	-	"
Fort Sullivan	62.87	77.67	62.06	67.53	87	50	37	3	-	8	4	1	10	3	2	S.	8	21	2	-	Cl'dy.
Fort Howard	60.00	80.35	64.38	68.24	92	52	40	-	3	5	2	1	1	14	5	S.W.	25	4	2	-	Fair.
Fort Wolcott	68.22	74.77	70.80	71.26	79	57	22	2	1	12	-	5	1	10	-	N.E.	7	7	17	-	Rain.
Council Bluffs	68.06	85.64	70.54	74.75	98	58	40	7	4	2	1	-	15	2	-	S.	18	13	-	-	Fair.
Fort Columbus	71.67	82.87	73.16	75.90	94	66	28	-	4	10	2	9	-	6	-	N.E.	24	2	5	-	"
Fort Delaware	74.06	78.03	76.00	76.03	87	70	17	3	3	2	3	5	4	11	-	S.W.	19	2	10	-	"
Washington city	68.25	86.16	74.35	76.25	96	62	34	2	5	11	2	2	2	6	1	N.E.	11	17	3	-	Cl'dy.
Fortress Monroe	76.97	82.32	78.70	79.33	92	70	22	2	1	6	2	7	1	8	4	S.W.	19	4	8	-	Fair.
Fort Johnston	79.16	82.48	80.64	80.76	86	74	12	11	4	1	-	-	3	10	2	N.	18	9	4	-	"
Augusta Arsl.	77.25	85.35	81.06	81.22	93	75	18	2	-	6	5	7	5	6	-	S.E.	10	9	12	-	Rain.
Canton. Jesup	78.25	89.74	83.96	83.98	100	60	40	9	6	7	1	2	2	3	1	N.	23	6	2	-	Fair.
Canton. Clinch	78.19	86.32	81.19	81.90	92	73	19	-	7	6	-	4	3	11	-	S.W.	17	-	14	-	"
New Orleans	85.38	88.90	81.16	85.15	94	76	18	10	1	2	1	-	-	1	16	W.	13	18	-	-	Cl'dy.
St. Augustine	81.61	84.19	82.06	82.62	90	76	14	-	3	15	-	-	-	9	4	N.E.	16	9	6	-	Fair.
Canton. Brooke	77.74	84.51	77.93	80.06	90	72	18	-	5	1	-	-	4	9	12	W.	17	1	13	-	"

No. IX. SEPTEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	53.30	58.16	53.06	54.84	70	40	30	4	1	5	-	3	11	1	5	S.	12	5	13	-	Cl'dy.
Fort Snelling	49.96	63.20	52.80	55.32	78	40	38	1	2	-	1	4	1	10	11	W.	12	4	14	-	Rain.
Fort Sullivan	55.36	68.93	54.80	59.70	82	44	38	5	1	2	-	-	6	12	4	S.W.	21	7	2	-	Fair.
Fort Howard	51.20	64.13	56.46	57.26	80	44	36	1	5	-	9	1	3	3	8	E.	14	12	4	-	Cl'dy.
Fort Wolcott	63.26	69.33	64.86	65.82	77	50	27	1	3	7	-	3	1	15	-	S.W.	9	13	8	-	"
Council Bluffs	54.23	74.16	59.86	62.75	94	40	54	5	7	2	-	4	10	2	-	S.	16	11	3	-	Fair.
Fort Columbus	64.63	74.96	66.96	68.85	87	51	36	-	9	3	3	5	1	5	4	N.W.	17	1	12	-	"
Fort Delaware	74.46	78.50	76.83	76.59	82	70	12	-	2	2	1	5	5	13	2	S.W.	17	5	8	-	"
Washington city	65·23	80.43	71.36	72.34	92	58	34	1	6	11	-	1	5	4	2	N.E.	9	13	8	-	Cl'dy.
Fortress Monroe	73.90	78.80	76.83	76.51	90	62	28	4	-	8	4	5	3	5	1	N.E.	15	4	11	-	Equal.
Fort Johnston	77.26	81.20	79.73	79.39	88	64	24	7	4	2	5	2	7	-	3	-	15	5	10	-	"
Augusta Arsl.	73.50	81.86	78.73	78.03	90	55	35	1	3	5	4	5	4	3	5	-	9	13	8	-	Cl'dy.
Canton. Jesup	70.93	81.66	75.63	76.07	94	47	47	3	2	8	9	6	1	1	-	E.	14	5	11	-	"
Canton. Clinch	74.06	83.26	78.40	78.57	89	54	35	-	6	3	-	3	-	18	-	S.W.	24	-	6	-	Fair.
New Orleans	77.50	82.96	81.46	80.64	90	64	26	11	-	1	11	-	1	4	2	E.	14	16	-	-	Cl'dy.
St. Augustine	80.56	84.13	81.23	81.97	89	73	16	1	3	21	-	-	-	5	-	N.E.	23	3	4	-	Fair.
Canton. Brooke	78.06	88.46	78.20	81.57	92	72	20	-	1	2	8	2	6	-	11	W.	24	-	6	-	"

No. X. OCTOBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	45.93	53.22	46.74	48.63	69	29	40	2	1	2	3	4	8	6	5	S.	11	13	6	1	Cl'dy.
Fort Snelling	41.93	57.87	47.58	49.13	82	26	56	-	1	-	2	1	2	14	11	S.W.	24	3	4	-	Fair.
Fort Sullivan	45.09	55.48	45.61	48.71	69	28	41	-	8	4	1	3	5	7	3	N.W.	18	11	2	-	"
Fort Howard	43.96	58.58	50.22	50.92	80	26	54	2	5	-	6	3	4	5	6	W.	16	14	1	-	"
Fort Wolcott	52.32	60.41	54.67	55.66	70	32	38	2	8	8	-	3	-	9	1	S.W.	15	7	9	-	Cl'dy.
Council Bluffs	46.12	72.19	53.93	57.41	96	27	69	12	4	-	1	4	10	-	-	N.	18	12	1	-	Fair.
Fort Columbus	52.25	62.41	54.93	56.53	77	35	42	4	8	4	4	4	1	3	3	N.W.	18	3	10	-	"
Fort Delaware	57.29	64.06	51.70	57.68	76	47	29	1	7	1	2	10	2	5	3	S.E.	16	6	9	-	"
Washington city	50.54	67.77	57.74	58.68	83	31	52	-	14	5	-	1	2	6	3	N.W.	20	4	7	-	"
Fortress Monroe	59.58	68.32	61.45	63.11	82	40	42	4	9	3	1	4	1	3	6	N.W.	16	9	6	-	"
Fort Johnston	67.93	73.64	71.87	71.14	80	54	26	12	2	3	2	1	10	-	1	N.	19	9	3	-	"
Augusta Arsl.	63.09	73.06	68.58	68.24	84	48	36	3	2	1	4	4	6	7	4	S.W.	18	9	4	-	"
Canton. Jesup	63.25	75.90	67.09	68.75	88	44	44	1	10	12	1	5	-	2	-	N.E.	21	1	9	-	"
Canton. Clinch	66.16	77.83	72.09	72.03	84	48	36	-	11	2	-	8	5	5	-	N.W.	25	1	5	-	"
New Orleans	69.70	75.67	73.54	72.97	80	61	19	9	2	3	6	3	2	-	6	N.	19	12	-	-	"
St. Augustine	73.38	77.90	75.22	75.50	81	61	20	-	2	15	-	10	1	3	-	N.E.	24	-	7	-	"
Canton. Brooke	71.54	83.87	73.41	76.27	88	60	28	-	-	7	11	3	3	6	1	E.	27	1	3	-	"

No. XI. NOVEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	33.76	38.00	35.03	35.60	62	20	42	2	6	1	5	1	4	6	5	S.W.	5	15	3	7	Cl'dy.
Fort Snelling	29.83	42.10	33.83	35.29	60	17	43	-	5	-	1	1	2	8	13	W.	14	8	3	5	"
Fort Sullivan	34.93	41.96	37.83	38.24	57	16	41	1	9	1	-	3	6	6	4	N.W.	19	6	4	1	Fair.
Fort Howard	31.43	41.60	35.83	36.29	54	16	38	3	3	1	3	1	2	5	12	W.	12	17	-	1	Cl'dy.
Fort Wolcott	40.53	46.70	43.26	43.43	60	22	38	4	7	2	-	1	-	14	2	S.W.	13	9	5	3	"
Council Bluffs	33.40	54.60	39.76	42.59	76	20	56	15	6	-	-	2	6	-	1	N.	19	11	-	-	Fair.
Fort Columbus	39.80	48.53	42.66	43.66	62	26	36	1	14	3	-	3	5	1	3	N.W.	16	6	7	1	"
Fort Delaware	44.10	51.56	56.26	50.64	65	33	32	-	11	1	-	4	-	8	6	N.W.	19	1	10	-	"
Washington city	38.93	53.43	45.16	45.84	68	31	37	-	9	3	-	1	2	15	-	S.W.	14	10	6	-	Cl'dy.
Fortress Monroe	46.10	53.90	50.70	50.23	66	32	34	2	8	1	2	8	3	2	4	S.E.	17	9	4	-	Fair.
Fort Johnston	56.86	63.90	62.20	60.98	76	40	36	8	-	4	2	-	11	1	4	S.	28	-	2	-	"
Augusta Arsl.	51.50	60.46	56.80	56.25	77	36	41	-	5	1	2	3	12	7	-	S.W.	17	10	3	-	"
Canton. Jesup	53.06	68.86	58.93	60.28	82	30	52	2	8	4	1	4	6	4	1	N.W.	28	1	1	-	"
Canton. Clinch	55.23	69.13	63.83	62.73	80	34	46	-	15	1	-	4	-	10	-	N.W.	27	1	2	-	"
New Orleans	61.30	70.16	65.20	65.55	83	48	35	12	4	5	3	3	2	-	1	N.	17	13	-	-	"
St. Augustine	60.03	63.86	61.46	61.78	81	33	48	6	12	2	-	9	-	1	-	N.W.	25	3	2	-	"
Canton. Brooke	61.20	74.53	64.53	66.75	86	38	48	-	3	2	3	2	3	14	3	S.W.	29	-	1	-	"

No. XII. DECEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Mackinac	21.03	25.40	23.80	23.41	42	-16	58	6	3	3	6	4	3	5	1	E.	2	19	1	9	Cl'dy.
Fort Snelling	14.22	25.29	17.93	19.15	48	-19	67	-	1	-	1	3	2	5	19	W.	18	9	-	4	Fair.
Fort Sullivan	25.67	31.35	26.48	27.83	54	-3	57	4	13	1	-	2	5	5	1	N.W.	17	8	5	1	"
Fort Howard	17.28	24.90	20.58	20.92	46	-20	66	1	11	-	1	2	-	8	8	N.W.	15	14	-	2	Cl'dy.
Fort Wolcott	31.87	37.77	34.22	34.62	59	12	47	2	9	5	-	3	-	10	2	S.W.	15	6	5	5	"
Council Bluffs	22.45	41.61	28.41	30.82	63	-6	69	15	6	-	1	1	6	-	2	N.	19	11	1	-	Fair.
Fort Columbus	30.19	36.74	32.51	33.14	55	3	52	2	9	4	-	1	2	7	6	N.W.	17	5	4	5	"
Fort Delaware	35.09	42.19	37.77	38.35	65	14	51	-	16	1	1	3	-	6	4	N.W.	18	6	1	6	"
Washington city	31.25	42.87	34.83	36.31	66	8	58	2	12	4	-	4	2	7	-	N.W.	14	13	1	3	Cl'dy.
Fortress Monroe	39.45	46.06	43.16	42.89	63	12	51	5	2	6	4	4	1	4	5	N.E.	24	2	4	1	Fair.
Fort Johnston	50.93	57.29	54.00	54.07	69	28	41	6	2	3	2	1	17	-	-	S.	24	5	2	-	"
Augusta Arsl.	43.35	52.03	47.54	47.65	64	26	38	2	5	3	4	2	2	3	10	W.	17	9	5	-	"
Canton. Jesup	45.64	61.32	51.54	52.83	77	20	57	1	9	6	3	8	1	2	1	N.W.	23	-	7	1	"
Canton. Clinch	49.00	60.45	54.06	54.50	73	23	50	-	13	2	-	8	5	2	1	N.W.	21	2	8	-	"
New Orleans	50.93	62.32	61.58	58.28	72	34	38	3	2	5	9	5	3	2	2	E.	20	11	-	-	"
St. Augustine	51.80	69.70	57.10	59.53	77	29	48	1	3	10	1	6	2	3	4	N.E.	23	5	3	-	"
Canton. Brooke	52.96	70.45	57.22	60.21	78	28	50	1	4	3	5	4	7	1	6	S.	24	-	7	-	"

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No. XIII. MEAN OF THE OBSERVATIONS FOR 1826.

PLACES OF OBSERVATION.	Latitude.	Longitude.	THERMOMETER. Mean Temperature. A.M. VII.	P.M. II.	P.M. IX.	Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	WINDS. N. Days.	N.W. Days.	N.E. Days.	E. Days.	S.E. Days.	S. Days.	S.W. Days.	W. Days.	Prevailing.	WEATHER. Fair. Days.	Cl'dy. Days.	Rain. Days.	Snow Days.	Prevailing.
Fort Mackinac	45.51	85.05	38.96	45.35	40.71	41.67	84	−17	101	3.91	3.08	2.58	4.58	1.91	5.25	2.50	6.58	W.	11.58	8.33	6.66	3.83	Cl'dy.
Fort Snelling	44.53	93.08	40.40	52.08	42.09	44.86	92	−23	115	0.33	2.75	-	1.42	3.50	4.00	8.33	10.08	W.	17.08	5.25	5.33	2.75	Fair.
Fort Sullivan	44.44	67.04	40.75	52.77	41.44	44.98	98	−24	122	2.33	5.58	2.25	2.00	1.16	7.83	5.25	4.00	S.	17.00	10.50	2.08	0.83	„
Fort Howard	44.40	87.00	38.44	54.35	42.60	45.13	100	−32	132	0.83	3.00	6.50	1.93	0.66	1.00	12.25	4.25	S.W.	16.41	10.33	2.25	1.42	„
Fort Wolcott	41.30	71.18	47.99	55.42	50.76	51.39	85	2	83	1.42	6.42	5.42	0.25	3.83	0.17	12.08	0.83	S.W.	13.08	8.00	8.00	1.42	Cl'dy.
Council Bluffs	41.25	95.43	43.84	62.74	48.84	51.80	104	−16	120	9.33	4.08	1.42	0.75	2.42	10.66	1.00	0.75	S.	18.08	10.25	1.42	0.66	Fair.
Fort Columbus	40.42	74.02	48.40	58.48	50.56	52.48	97	−1	98	1.25	7.83	3.42	2.25	3.25	3.92	5.66	2.83	N.W.	18.25	4.58	6.25	1.33	„
Fort Delaware	39.35	75.29	53.10	62.23	54.82	56.71	94	8	86	0.42	6.83	3.25	0.75	5.33	1.83	10.25	1.75	S.W.	17.66	5.42	6.42	0.75	„
Washing'n c'y	38.53	76.55	51.23	65.78	57.15	58.02	96	0	96	1.58	8.00	7.25	0.25	2.75	2.58	7.00	1.16	N.W.	17.33	8.50	5.00	0.50	„
Fort.'s Monroe	37.02	76.12	59.24	65.35	61.65	62.08	92	12	80	2.42	3.08	3.83	3.50	7.00	1.83	5.83	2.92	S.E.	17.75	6.16	6.33	0.16	„
Fort Johnston	34.00	78.05	65.30	70.73	68.18	68.07	88	28	60	7.50	3.83	1.58	1.66	1.42	8.58	2.75	3.08	S.	21.00	5.16	4.25	-	„
Augusta Arsl.	33.28	81.53	63,16	71.79	67.60	67.52	94	26	68	1.16	3.00	2.47	3.83	3.58	4.25	8.33	3,83	S.W.	16.75	6.92	6.67	0.33	„
Cant. Jesup	31.30	93.47	63.67	75.24	68.20	69.04	100	14	86	3.33	4.66	5.91	3.58	5.83	3.25	2.83	1.00	N.E.	20.16	3.33	6.75	0.16	„
Cant. Clinch	30.24	87.14	65.60	74.57	69.60	69.92	93	23	70	0.41	7.58	2.41	0.41	5.66	3.83	9.75	0.33	S.W.	19.91	1.16	9.16	0.16	„
New Orleans	29.57	90.14	68.60	77.25	71.22	72.36	96	25	71	6.41	1.91	3.75	5.91	3.58	3.08	2.00	3.75	N.	17.66	11.41	1.33	-	„
St. Augustine	29.50	81.27	72.43	76.09	73.23	73.91	92	33	59	1.27	3.36	13.36	0.45	5.36	0.73	3.72	2.00	N.E.	21.72	4.63	4.00	-	„
Cant. Brooke	27.57	82.35	68.73	80.97	70.24	73.31	92	28	64	0.08	3.25	2.66	5.58	3.59	3.75	5.58	5.91	W.	23.08	0.91	6.33	0.8	„

No. I. JANUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	12.58	23.51	16.41	17.36	40	-20	60	3	3	9	5	4	-	2	5	N.E.	6	17	-	8	Cl'dy.
Fort Snelling	11.09	24.19	16.51	17.26	44	-22	66	1	6	-	-	2	2	13	7	S.W.	17	9	1	4	Fair.
Fort Howard	10.32	23.54	14.77	16.21	40	-14	54	1	3	3	-	-	7	6	11	W.	17	13	-	1	"
Fort Preble	14.58	25.19	19.19	19.65	40	-8	48	4	5	5	-	-	-	11	6	S.W.	22	3	-	6	"
Fort Constitution	17.22	26.54	20.16	21.31	40	-8	48	8	9	1	-	-	2	3	8	N.W.	15	12	-	4	Cl'dy.
Fort Wolcott	22.41	28.64	24.09	25.05	41	-2	43	4	11	8	-	-	-	7	1	N.W.	14	9	1	7	"
Fort Armstrong	16.67	27.06	21.51	21.75	46	-6	52	3	10	2	2	3	4	-	7	N.W.	24	5	1	1	Fair.
West Point	19.38	28.93	21.61	23.31	49	-10	59	7	10	3	1	5	1	1	3	N.W.	18	4	1	8	"
Fort Trumbull	24.32	29.00	28.12	27.15	62	0	62	1	10	7	1	1	-	4	7	N.W.	19	5	2	5	"
Fort Columbus	21.22	28.45	22.38	24 02	43	0	43	4	12	2	4	1	3	1	4	N.W.	15	8	4	4	Cl'dy.
Washington city	24.51	36.32	29.77	30.20	54	9	45	4	10	5	-	2	1	6	3	N.W.	20	8	3	-	Fair.
Jefferson Barracks	25.06	40.41	30.80	32.09	53	8	45	1	8	-	1	4	10	1	6	S.	20	8	1	2	"
Fortress Monroe	31.32	40.51	37.90	36.58	58	13	45	5	2	6	4	4	1	4	5	N.E.	24	4	3	-	"
Augusta Arsl.	40.96	47.51	45.25	44.57	71	26	45	8	5	5	-	1	5	4	3	N.	13	12	6	-	Cl'dy.
Canton. Jesup	45.38	57.48	50.29	51.05	78	24	54	1	9	4	3	7	2	5	-	N.W.	18	7	6	-	Fair.
Canton. Clinch	47.38	55.32	51.38	51 36	72	24	48	10	2	7	-	3	7	2	-	N.	14	13	4	-	Cl'dy.
Petite Coquille	**45.74**	**57.22**	**49.48**	**50.81**	**80**	**23**	**57**	-	**3**	**10**	**6**	**5**	**1**	**3**	**3**	**N.E.**	**15**	**11**	**5**	-	"
Canton. Brooke	**51.67**	**63.09**	**55.83**	**56.86**	**78**	**26**	**52**	**1**	**7**	**5**	-	**1**	**8**	**3**	**6**	**S.**	**25**	**3**	**3**	-	**Fair.**

No. II. FEBRUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	16.21	30.85	21.14	22.73	47	-16	63	-	6	7	1	4	-	6	4	N.E.	7	6	2	13	Snow.
Fort Snelling	18.42	23.46	23.71	24.86	46	-8	54	-	1	-	-	1	3	7	16	W.	20	2	2	4	Fair.
Fort Howard	19.21	34.00	22.10	25.10	44	-6	50	4	2	-	-	-	1	11	10	S.W.	19	7	-	2	"
Fort Preble	18.75	31.10	23.82	24.56	45	-7	52	4	5	-	-	2	4	2	11	W.	22	2	1	3	"
Fort Constitution	21.21	33.07	26.35	26.88	47	-4	51	1	8	-	2	1	4	4	8	N.W.	15	11	1	1	"
Fort Wolcott	28.00	34.57	30.28	31.28	48	-1	49	1	13	5	-	1	-	8	-	N.W.	13	7	3	5	Cl'dy.
Fort Armstrong	25.78	38.07	31.25	31.37	57	2	55	9	9	1	2	-	4	1	2	N.W.	18	6	2	2	Fair.
West Point	26.00	38.60	31.00	31.87	54	2	52	4	6	2	-	3	2	6	5	N.W.	16	5	4	3	"
Fort Trumbull	31.07	36.85	36.28	34.73	48	5	43	1	7	6	3	1	2	3	5	N.W.	14	7	4	3	"
Fort Columbus	28.57	35.39	31.89	31.95	48	7	41	2	10	5	1	2	2	5	1	N.W.	15	3	6	4	"
Washington city	37.55	49.57	40.78	42.63	69	34	35	1	5	8	-	3	3	5	3	N.E.	10	10	6	2	Cl'dy.
Jefferson Barracks	37.03	53.46	43.17	44.55	72	24	48	4	5	1	-	10	8	-	-	S.E.	16	5	6	1	Fair.
Fortress Monroe	41.60	49.35	46.57	45.84	59	22	37	1	1	10	2	1	3	9	1	N.E.	9	8	11	-	Rain.
Augusta Arsl.	58.17	64.07	61.53	61.26	80	47	33	1	2	3	-	2	-	12	8	S.W.	13	7	8	-	Cl'dy.
Canton. Jesup.	57.89	69.21	61.46	62.85	84	44	40	4	5	8	2	9	-	-	-	S.E.	13	7	8	-	"
Canton. Clinch	60.96	67.85	63.50	64.10	77	44	33	6	2	-	-	6	5	9	-	S.W.	11	13	4	-	"
Petite Coquille	60.10	72.53	62.60	65.08	86	42	44	-	1	3	6	3	9	3	3	S.	23	3	2	-	Fair.
Canton. Brooke	64.07	78.32	66.64	69.68	82	50	32	-	-	-	-	6	2	8	12	W.	27		1	-	"

No. III.

MARCH.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	18.25	34.61	24.70	25.85	51	–5	56	1	9	6	-	7	2	2	4	N.W.	8	15	4	4	Cl'dy.
Fort Snelling	25.85	39.74	29.61	31.74	56	–7	63	1	3	1	-	1	5	8	12	W.	18	6	2	5	Fair.
Fort Howard	23.74	40.96	28.29	31.00	56	–16	72	-	3	-	7	-	1	8	12	W.	21	6	3	1	"
Fort Preble	28.77	40.74	32.25	33.92	63	2	61	-	7	3	1	1	10	4	5	S.	21	7	3	-	"
Fort Constitution	31.29	41.83	33.45	35.52	66	11	55	2	8	2	1	2	8	2	6	N.W.	21	9	1	-	"
Fort Wolcott	34.03	42.61	38.25	38.30	56	24	32	1	15	2	-	5	-	8	-	N.W.	17	6	6	2	"
Fort Armstrong	35.16	45.38	40.74	40.43	74	16	58	3	8	3	1	2	8	4	2	N.W.	20	8	3	-	"
West Point	34.87	48.48	38.38	40.58	74	15	59	8	12	1	-	5	1	2	2	N.W.	21	6	4	-	"
Fort Trumbull	39.19	44.58	43.29	42.35	60	26	34	4	7	3	1	3	4	4	5	N.W.	21	4	6	-	"
Fort Columbus	34.61	46.03	37.38	39.34	64	18	46	5	10	2	3	4	3	1	3	N.W.	19	7	4	1	"
Washington city	40.09	55.80	46.35	47.41	73	33	40	1	15	3	-	3	6	3	-	N.W.	15	11	5	-	Cl'dy.
Jefferson Barracks	43.54	59.74	49.67	50.98	81	29	52	8	3	-	5	6	1	3	5	N.	22	2	5	2	Fair.
Fortress Monroe	46.58	55.09	55.58	51.08	66	35	31	2	2	8	3	2	3	6	5	N.E.	15	10	6	-	Cl'dy.
Augusta Arsl.	53.29	66.12	58.48	59.30	79	42	37	1	2	4	5	3	4	4	8	S.W.	18	5	8	-	Fair.
Canton. Jesup	54.61	67.67	58.70	60.33	82	34	48	-	7	3	2	9	5	3	2	S.E.	15	7	9	-	Cl'dy.
Canton. Clinch	58.51	67.61	63.58	63.23	79	43	36	3	5	-	-	4	12	5	2	S.	24	2	5	-	Fair.
Petite Coquille	57.25	70.38	60.35	62.66	87	42	45	1	6	5	5	5	4	1	4	N.W.	20	7	4	-	"
Canton. Brooke	65.35	78.64	67.41	70.47	84	52	32	-	3	-	1	6	4	2	15	W.	26	2	3	-	"

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	34.80	47.93	35.46	39.39	63	23	40	-	6	1	2	8	-	7	6	S.E.	2	15	10	3	Cl'dy.
Fort Snelling	41.86	51.43	41.00	44.76	65	28	37	-	2	-	2	3	2	4	17	W.	13	5	10	2	„
Fort Howard	36.93	52.73	39.93	43.20	68	26	42	1	-	6	2	-	-	3	18	W.	16	13	1	-	Fair.
Fort Preble	42.26	54.40	43.56	46.74	77	29	48	6	4	1	2	6	4	3	4	S.E.	18	4	8	-	„
Fort Constitution	44.33	53.30	45.26	47.63	76	33	43	2	8	8	1	1	4	3	3	N.W.	14	12	4	-	Cl'dy.
Fort Wolcott	44.56	52.90	47.80	48.42	60	30	30	1	7	8	1	2	-	11	-	S.W.	10	9	11	-	Rain.
Fort Armstrong	46.76	57.46	49.33	51.18	70	28	42	4	3	2	4	1	5	4	7	W.	21	5	4	-	Fair.
West Point	47.73	62.96	53.30	54.66	78	32	46	2	10	1	-	7	4	6	-	N.W.	17	6	7	-	„
Fort Trumbull	49.53	55.13	54.80	53.15	65	40	25	1	2	3	3	7	3	5	6	S.E.	14	5	11	-	Cl'dy.
Fort Columbus	47.20	59.86	49.13	52.06	76	36	40	3	7	-	-	8	4	5	3	S.E.	19	3	8	-	Fair.
Washington city	51.56	70.26	58.10	59.97	83	38	45	-	11	2	-	4	3	6	1	N.W.	13	11	6	-	Cl'dy.
Jefferson Barracks	54.00	69.66	60.00	61.22	85	40	45	-	4	-	1	5	9	5	6	S.	17	2	11	-	Fair.
Fortress Monroe	56.86	67.36	61.33	61.85	80	44	36	-	4	2	3	9	4	6	2	S.E.	10	10	10	-	Cl'dy.
Augusta Arsl.	62.33	73.53	67.93	67.93	85	52	33	-	2	-	3	7	7	5	6	S.	12	9	9	-	„
Canton. Jesup	64.23	76.50	67.90	69.54	88	48	40	5	2	4	5	6	4	3	1	S.E.	16	8	6	-	Fair.
Canton. Clinch	69.53	75.63	71.23	72.13	85	54	31	-	6	-	-	8	3	13	-	S.W.	23	3	4	-	„
Petite Coquille	67.20	81.06	68.20	72.15	94	54	40	1	2	2	6	3	12	2	2	E.	20	10	-	-	„
Canton. Brooke	70.33	83.67	72.13	75.38	88	62	26	-	1	2	-	5	1	10	11	W.	29	-	1	-	„

No. V. MAY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	47.54	58.54	43.67	49.92	82	32	50	-	7	7	1	6	3	4	3	N.W.	8	20	2	1	Cl'dy.
Fort Snelling	59.77	70.16	58.87	62.93	86	40	46	2	3	-	2	4	8	3	9	W.	22	2	7	-	Fair.
Fort Howard	47.54	67.77	51.51	55.61	87	32	55	1	1	15	-	1	2	5	6	N.E.	26	5	-	-	"
Fort Preble	50.42	62.16	50.19	54.26	68	34	34	3	-	4	1	10	7	3	3	S.E.	22	5	4	-	"
Fort Constitution	50.83	59.29	50.70	53.61	87	38	49	3	2	2	3	2	14	2	3	S.	21	6	4	-	"
Fort Wolcott	51.80	61.35	53.61	55.59	75	38	37	1	9	3	1	6	-	11	-	S.W.	17	4	10	-	"
Fort Armstrong	59.16	71.58	60.74	63.83	90	46	44	1	4	7	-	-	12	2	5	S.	26	2	3	-	"
West Point	56.06	71.45	58.32	61.94	86	38	48	3	8	3	-	10	4	2	1	S.E.	22	4	5	-	"
Fort Trumbull	55.19	61.51	60.29	59.00	75	42	33	2	4	3	1	7	4	8	2	S.W.	19	6	6	-	"
Fort Columbus	55.61	66.45	56.55	59.54	84	41	43	1	4	3	2	10	5	3	3	S.E.	20	5	6	-	"
Washington city	62.38	72.09	64.19	66.22	84	50	34	-	8	9	-	6	3	4	1	N.E.	21	6	4	-	"
Jefferson Barracks	60.64	73.35	62.58	65.52	84	42	42	4	4	3	1	-	5	2	12	W.	21	2	8	-	"
Fortress Monroe	58.48	68.29	63.64	63.47	78	48	30	-	3	8	5	10	2	2	1	E.	15	8	8	-	Cl'dy.
Augusta Arsl.	65.00	78.93	68.83	70.92	86	48	38	-	-	2	5	2	2	13	7	S.W.	12	10	9	-	"
Canton. Jesup	66.45	79.50	70.71	72.22	93	46	47	4	5	6	4	7	1	1	3	S.E.	17	3	11	-	Fair.
Canton. Clinch	67.96	77.09	72.80	72.62	86	52	34	1	5	-	1	2	6	14	2	S.W.	16	6	9	-	"
Petite Coquille	68.70	80.09	70.77	73.19	90	54	36	1	2	9	6	3	4	4	2	N.E.	20	10	1	-	"
Canton. Brooke	73.54	85.61	74.96	78.04	90	62	28	-	1	-	-	7	-	8	15	W.	24	2	5	-	"

No. VI. JUNE.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.																		
	VII.	II.	IX.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
Fort Brady	56.80	70.30	51.93	59.68	84	35	49	-	7	10	1	9	-	2	1	N.E.	12	12	6	-	Cl'dy.
Fort Snelling	70.56	77.83	67.46	71.95	92	50	42	1	-	-	1	3	13	5	7	S.	14	5	11	-	"
Fort Howard	60.76	80.80	62.90	68.15	96	40	56	-	1	7	2	4	-	4	12	W.	25	5	-	-	Fair.
Fort Preble	59.50	70.86	58.36	62.91	81	48	33	1	1	6	1	6	8	5	2	S.	20	6	4	-	"
Fort Constitution	60.03	66.43	58.80	61.75	79	51	28	-	1	2	1	1	18	3	4	S.	19	7	4	-	"
Fort Wolcott	60.83	69.52	63.23	64.52	77	47	30	1	8	2	1	2	2	14	-	S.W.	18	4	8	-	"
Fort Armstrong	71.40	77.26	68.26	72.31	94	50	44	4	2	1	3	2	16	1	1	S.	22	4	4	-	"
West Point	63.70	78.90	65.20	69.27	88	50	38	5	3	1	-	5	7	6	3	S.	16	10	4	-	"
Fort Trumbull	63.56	70.30	67.90	67.25	76	54	22	2	4	3	-	3	6	9	3	S.W.	20	4	6	-	"
Fort Columbus	64.00	76.46	65.33	68.60	89	50	39	-	7	2	-	8	7	2	4	S.E.	16	4	10	-	"
Washington city	71.16	80.46	71.43	74.35	92	58	34	5	6	7	2	2	-	8	-	S.W.	16	8	6	-	"
Jefferson Barracks	70.10	81.63	69.13	73.62	91	57	34	4	1	-	1	-	9	8	7	S.	25	-	5	-	"
Fortress Monroe	64.90	76.23	73.03	71.39	86	56	30	-	1	7	6	8	1	7	-	S.E.	18	3	9	-	"
Augusta Arsl.	70.86	85.33	74.76	76.98	96	64	32	1	1	5	4	5	4	4	6	W.	19	4	7	-	"
Canton. Jesup	75.40	87.93	81.03	81.45	95	63	32	-	3	9	1	13	3	-	1	S.E.	20	5	5	-	"
Canton. Clinch	76.00	85.76	82.40	81.39	90	68	22	-	1	-	-	2	7	18	2	S.W.	21	4	5	-	"
Petite Coquille	79.20	88.06	83.56	83.61	93	68	25	-	3	3	7	6	3	6	2	E.	26	4	-	-	"
Canton. Brooke	77.20	87.53	79.33	81.35	92	74	18	-	-	1	10	-	4	-	15	W.	21	7	2	-	"

No. VII. JULY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	62.03	70.41	58.36	63.60	84	50	34	-	16	6	2	4	-	3	-	N.W.	5	18	8	-	Cl'dy.
Fort Snelling	71.80	80.64	69.74	74.06	96	60	36	1	4	2	-	3	10	3	8	S.	19	9	3	-	Fair.
Fort Howard	64.93	85.00	66.49	72.14	98	58	40	1	3	8	1	-	3	5	10	W.	27	3	1	-	"
Fort Preble	66.61	79.03	64.54	70.06	89	56	33	2	2	1	1	6	6	11	2	S.W.	19	11	1	-	"
Fort Constitution	66.12	72.83	63.96	67.64	83	57	26	-	7	3	2	2	12	2	3	S.	19	11	1	-	"
Fort Wolcott	66.87	76.38	70.22	71.16	83	58	25	-	7	5	-	3	2	14	-	S.W.	18	6	7	-	"
Fort Armstrong	76.87	84.61	73.67	78.38	94	65	29	4	1	-	2	1	9	9	5	S.	21	10	-	-	"
West Point	70.32	80.58	68.03	72.98	101	64	37	1	5	-	-	4	8	9	4	S.W.	21	8	2	-	"
Fort Trumbull	69.16	76.67	73.64	73.16	86	62	24	1	1	1	1	3	4	17	3	S.W.	22	4	5	-	"
Fort Columbus	71.80	83.25	71.83	75.63	96	63	33	1	6	4	-	7	2	7	4	S.W.	18	6	7	-	"
Washington city	78.41	82.38	79.00	79.93	98	70	28	-	6	10	-	4	3	8	-	N.E.	19	6	6	-	"
Jefferson Barracks	77.48	85.22	77.74	80.15	94	52	42	1	3	-	-	1	3	13	10	S.W.	22	7	2	-	"
Fortress Monroe	74.58	84.38	78.58	79.18	94	70	24	-	-	9	4	8	3	7	-	N.E.	21	5	5	-	"
Augusta Arsl.	77.16	91.77	79.70	82.88	102	72	30	1	-	1	3	11	4	6	5	S.E.	16	5	10	-	"
Canton. Jesup	78.74	89.58	82.54	83.62	95	72	23	2	4	6	5	8	3	1	2	S.E.	13	5	13	-	Cl'dy.
Canton. Clinch	83.48	86.48	83.90	84.62	92	75	17	3	3	1	-	-	3	20	1	S.W.	14	2	15	-	"
Petite Coquille	81.51	88.25	83.74	84.50	93	77	16	2	5	2	6	4	3	7	2	S.W.	23	6	2	-	Fair.
Canton. Brooke	80.38	89.03	79.61	82.85	94	70	24	-	-	4	2	9	15	1	-	S.	20	7	4	-	"

No. VIII. AUGUST.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	60.38	70.12	60.22	63.57	82	42	40	-	11	6	4	8	1	1	-	N.W.	4	20	7	-	Cl'dy.
Fort Snelling	64.67	78.19	68.19	70.35	92	50	42	-	3	7	4	5	9	2	1	S.	15	14	2	-	"
Fort Howard	63.41	82.06	65.04	70.17	88	50	38	1	2	10	1	2	-	6	9	N.E.	21	10	-	-	Fair.
Fort Preble	61.80	76.09	62.32	66.74	95	52	43	-	5	1	3	1	10	11	-	S.W.	24	4	3	-	"
F't Constitution	62.67	70.45	62.35	65.16	92	52	40	-	3	5	1	-	17	3	2	S.	23	5	3	-	"
Fort Wolcott	66.06	73.74	69.03	69.61	86	58	28	2	6	4	-	3	-	16	-	S.W.	18	3	10	-	"
Fort Armstrong	73.80	83.29	72.90	76.66	92	60	32	5	-	3	6	3	7	6	1	S.	26	5	-	-	"
West Point	67.32	80.90	69.48	72.57	101	56	45	1	7	1	-	5	5	7	5	S.W.	15	13	3	-	"
Fort Trumbull	68.03	73.80	72.29	71.39	88	60	28	1	2	4	2	5	3	12	2	S.W.	16	9	6	-	"
Fort Columbus	71.45	79.06	72.51	74.34	95	62	33	5	3	2	-	11	3	2	5	S.E.	20	3	8	-	"
Washington city	76.32	82.06	76.87	78.42	94	70	24	-	-	9	-	11	-	11	-	S.E.	17	8	6	-	"
Jefferson Bar'ks	78.19	85.83	81.00	81.67	92	72	20	-	1	1	9	7	2	10	1	S.W.	23	1	7	-	"
Fortress Monroe	74.54	85.64	80.45	80.21	94	66	28	-	2	9	2	4	4	9	1	S.W.	21	6	4	-	"
Augusta Arsl.	74.71	89.12	80.48	81.44	99	67	32	1	1	7	4	7	4	6	-	S.E.	18	3	10	-	"
Canton. Jesup	77.51	89.38	82.00	82.96	94	74	20	-	5	7	6	5	4	2	2	N.E.	19	2	10	-	"
Canton. Clinch	77.64	86.19	82.61	82.15	92	70	22	3	1	3	1	6	5	11	1	S.W.	22	2	7	-	"
Petite Coquille	78.12	87.22	81.90	82.41	95	71	24	3	3	5	6	6	3	3	2	S.E.	24	5	2	-	"
Canton. Brooke	80.06	88.00	80.12	82.73	94	72	22	2	1	2	-	16	4	2	4	S.E.	15	11	5	-	Cl'dy.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'y.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	54.16	66.20	56.26	58.87	81	35	46	-	16	1	-	8	1	3	1	N.W.	3	18	9	-	Cl'dy.
Fort Snelling	55.76	69.06	58.23	61.02	90	32	58	6	3	7	1	3	7	1	2	N.	15	10	5	-	Equal.
Fort Howard	58.46	74.36	59.56	64.12	98	36	62	-	-	10	-	1	3	8	8	N.E.	25	3	2	-	Fair.
Fort Preble	56.36	70.30	57.90	61.52	85	50	35	-	5	1	5	5	5	9	-	S.W.	21	7	2	-	"
Fort Constitu'on	57.10	66.63	57.60	60.44	82	50	32	1	7	9	4	1	7	-	1	N.E.	19	9	2	-	"
Fort Wolcott	59.60	68.46	63.03	63.70	80	50	30	2	5	10	2	-	-	10	1	N.E.	15	6	9	-	Equal.
Fort Armstrong	63.40	72.96	65.93	67.43	90	43	47	2	3	6	5	9	2	3	-	S.E.	26	4	-	-	Fair.
West Point	59.96	74.93	61.56	65.48	88	52	36	5	8	4	1	4	6	2	-	N.W.	21	4	5	-	"
Fort Trumbull	63.30	69.70	67.26	66.75	80	52	28	2	2	10	1	4	1	7	3	N.E.	17	7	6	-	"
Fort Columbus	63.06	72.76	65.33	67.05	84	50	34	12	3	4	-	3	5	2	1	S.	18	8	4	-	"
Washington city	66.60	75.50	68.36	70.15	89	52	37	5	8	4	3	2	5	2	1	N.W.	19	6	5	-	"
Jefferson Bar'ks	69.00	77.43	72.43	72.95	82	52	30	4	8	1	1	1	8	1	6	S.	16	14	-	-	"
Fortress Monroe	66.63	76.26	71.66	71.52	91	56	35	2	7	9	4	4	1	3	-	N.E.	20	9	1	-	"
Augusta Arsl.	67.73	83.06	74.50	75.10	90	56	34	-	3	4	9	8	3	1	2	S.E.	19	5	6	-	"
Canton. Jesup	77.80	87.10	79.76	81.55	94	62	32	-	2	9	5	7	4	1	2	N.E.	23	2	5	-	"
Canton. Clinch	74.06	83.33	79.23	78.87	88	63	25	2	2	1	1	6	2	14	2	S.W.	23	3	4	-	"
Petite Coquille	75.06	85.90	80.93	80.63	91	64	27	1	-	8	3	8	3	6	1	S.E.	25	4	1	-	"
Canton. Brooke	77.13	87.00	79.36	81.16	92	68	24	-	-	8	2	6	3	2	9	W.	19	3	8	-	"

No. X. OCTOBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	40.74	51.42	43.19	45.12	68	23	45	1	11	4	-	8	2	4	1	N.W.	6	18	4	3	Cl'dy.
Fort Snelling	42.00	58.19	47.58	49.26	82	26	56	-	1	-	2	1	2	14	11	S.W.	24	3	4	-	Fair.
Fort Howard	39.64	56.71	44.51	46.95	80	20	60	7	4	3	-	-	14	-	3	S.	23	7	1	-	"
Fort Preble	45.80	56.74	49.06	50.53	71	31	40	-	7	-	3	5	3	9	4	S.W.	19	8	4	-	"
F't Constitution	47.29	56.62	50.29	51.40	70	32	38	1	7	6	-	1	8	5	3	S.	19	9	3	-	"
Fort Wolcott	52.87	60.29	55.03	56.06	70	34	36	7	5	3	-	1	2	9	4	S.W.	12	10	9	-	Cl'dy.
Fort Armstrong	46.12	60.51	50.16	52.26	78	20	58	5	5	4	2	1	6	5	3	N.	27	4	-	-	Fair.
West Point	50.35	60.45	52.54	54.45	74	34	40	4	11	4	2	2	5	1	2	N.W.	17	10	4	-	"
Fort Trumbull	55.03	60.61	58.83	58.16	68	40	28	2	3	7	-	2	6	8	3	S.W.	15	6	10	-	Cl'dy.
Fort Columbus	52.00	60.09	55.61	55.90	71	34	37	8	5	8	-	2	5	2	1	N.	16	15	-	-	Fair.
Washington city	53.67	63.54	58.03	58.41	77	36	41	5	7	1	1	4	5	5	3	N.W.	11	9	11	-	"
Jefferson Bar'ks	54.87	63.38	58.70	58.98	80	36	44	5	9	-	-	2	4	3	8	W.	14	12	5	-	Cl'dy.
Fortress Monroe	58.16	66.74	63.48	62.79	77	39	38	7	5	6	3	5	-	5	-	N.	16	8	7	-	Fair.
Augusta Arsl.	60.09	73.70	66 19	66.66	92	39	53	5	5	3	3	3	3	6	3	S.W.	23	3	5	-	"
Canton. Jesup	60.09	74.35	67.06	67.17	90	40	50	-	8	7	2	8	2	3	1	N.W.	25	4	2	-	"
Canton. Clinch	63.25	73.77	69.96	68.99	85	47	38	7	5	3	1	5	2	5	3	N.	24	1	6	-	"
Petite Coquille	62.83	75.22	69.51	69.19	88	46	42	1	3	7	9	2	3	4	2	E.	27	3	1	-	"
Canton. Brooke	69.87	83.35	71.16	74.79	88	54	34	-	1	-	-	5	4	2	19	W.	25	-	6	-	"

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	28.13	34.80	30.53	31.15	51	16	35	3	14	-	10	1	-	1	1	N.W.	10	14	2	4	Cl'dy.
Fort Snelling	26.16	39.66	30.16	31.99	59	-3	62	2	4	1	2	2	2	2	15	W.	15	14	-	1	Fair.
Fort Howard	29.53	40.93	32.10	34.19	64	8	56	6	3	2	1	-	10	2	6	S.	15	15	-	-	Equal.
Fort Preble	28.70	38.36	30.56	32.54	52	13	39	6	7	5	-	-	1	4	7	N.W.	18	9	2	1	Fair.
F't Constitution	31.66	36.50	33.46	33.87	57	20	37	4	17	1	1	2	-	3	2	N.W.	14	14	1	1	Cl'dy.
Fort Wolcott	34.80	41.33	36.96	37.70	57	21	36	2	16	2	-	3	1	2	4	N.W.	11	10	5	4	"
Fort Armstrong	34.10	44.30	37.53	38.64	70	12	58	4	10	-	4	1	1	10	-	S.W.	20	9	1	-	Fair.
West Point	34.40	42.63	36.66	37.90	64	20	44	7	12	2	-	2	1	5	1	N.W.	18	7	5	-	"
Fort Trumbull	39.43	43.66	42.46	41.85	59	32	27	3	9	3	-	2	2	4	7	N.W.	18	4	6	2	"
Fort Columbus	36.90	43.43	38.66	39.66	61	21	40	2	13	5	-	2	1	3	4	N.W.	17	13	-	-	"
Washington city	39.13	49.33	46.16	44.87	67	25	42	-	22	-	1	1	1	5	-	N.W.	10	12	7	1	Cl'dy.
Jefferson Barracks	47.33	53.50	50.36	50.40	74	30	44	3	9	-	3	4	6	3	2	N.W.	10	15	2	3	"
Fortress Monroe	45.16	53.80	50.16	49.71	71	30	41	5	6	1	4	4	-	7	3	S.W.	17	12	1	-	Fair.
Augusta Arsl.	54.03	61.20	57.66	57.63	74	30	44	5	6	2	-	5	-	9	3	S.W.	21	4	5	-	"
Canton. Jesup	55.50	66.30	59.06	60.29	82	36	46	-	2	8	3	10	3	4	-	S.E.	20	5	5	-	"
Canton. Clinch	57.30	66.36	63.46	62.37	77	35	42	6	4	3	2	8	4	3	-	S.E.	20	6	4	-	"
Petite Coquille	57.06	68.30	62.23	62.53	83	39	44	-	10	1	12	1	-	5	1	E.	22	5	3	-	"
Canton. Brooke	64.06	77.26	66.93	69.42	86	46	40	-	5	-	-	7	-	-	18	W.	26	1	3	-	"

No. XII. DECEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	16.93	23.54	20.61	20.33	38	-5	43	1	7	1	11	7	-	1	3	E.	10	8	-	13	Cl'dy.
Fort Snelling	7.38	19.74	11.90	13.01	33	-14	47	2	4	5	3	1	6	2	8	W.	13	14	-	4	"
Fort Howard	18.06	25.58	17.64	20.42	48	-7	55	7	4	-	-	2	9	4	3	S.	22	6	3	-	Fair.
Fort Preble	23.67	31.61	27.93	27.74	46	0	46	3	14	6	2	3	1	2	-	N.W.	16	11	2	2	"
Fort Constitution	26.58	32.90	28.77	29.42	53	-3	56	2	9	5	1	1	2	1	10	W.	12	13	4	2	Cl'dy.
Fort Wolcott	33.19	37.87	35.00	36.35	58	12	46	6	13	6	-	1	-	4	1	N.W.	9	14	4	4	"
Fort Armstrong	24.38	31.54	27.29	27.74	56	10	46	2	10	2	2	2	8	4	1	N.W.	19	12	-	-	Fair.
West Point	35.03	37.12	32.70	34.95	58	10	48	7	7	4	2	6	4	-	1	N.W.	13	7	8	3	Cl'dy.
Fort Trumbull	40.35	43.67	42.70	42.24	54	23	31	5	5	10	3	1	2	5	-	N.E.	9	12	7	3	"
Fort Columbus	31.16	35.25	33.22	33.21	48	17	31	2	10	2	3	3	2	4	5	N.W.	15	15	1	-	"
Washington city	37.28	46.74	40.74	41.59	65	21	44	-	10	5	-	6	1	9	-	N.W.	6	14	10	1	"
Jefferson Barracks	35.77	43.67	37.83	39.09	64	22	42	5	4	1	1	1	15	2	2	S.	11	11	6	3	"
Fortress Monroe	46.32	55 25	51.00	50.86	65	34	31	2	3	8	1	5	1	9	2	S.W.	14	15	2	-	"
Augusta Arsl.	51.09	64.35	56.03	57.16	79	31	48	2	4	2	-	4	8	8	3	S.W.	16	13	2	-	Fair.
Canton, Jesup	53.93	60.51	58.51	57.65	78	32	46	-	6	7	5	9	1	3	-	S.E.	13	10	8	-	Cl'dy.
Canton, Clinch	57.45	65.80	62.93	62.06	78	34	44	1	2	3	2	17	5	1	-	S.E.	21	6	4	-	Fair.
Petite Coquille	59.03	69.41	59.77	62.74	82	41	41	2	2	6	10	10	1	-	-	E.	24	7	-	-	"
Canton, Brooke	63.48	74.93	64.45	67.62	80	44	36	-	1	-	-	2	1	2	25	W.	29	-	2	-	"

No. XIII. MEAN OF THE OBSERVATIONS FOR 1827.

PLACES OF OBSERVATION.	Latitude.	Longitude.	THERMOMETER. Mean Temperature. A.M. VII.	P.M. II.	P.M. IX.	Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	WINDS. N. Days.	N.W. Days.	N.E. Days.	E. Days.	S.E. Days.	S. Days.	S.W. Days.	W. Days.	Prevailing.	WEATHER. Fair. Days.	Cl'dy. Days.	Rain. Days.	Snow Days.	Prevailing.
Fort Brady	46.39	84.83	37.37	48.52	38.54	41.46	84	-20	104	0.75	9.41	4.82	3.08	6.16	0.75	3.00	2.47	N.W.	6.75	15.08	4.50	4.08	Cl'dy.
Fort Snelling	44.53	93.08	41.28	53.44	43.58	46.10	96	-22	118	1.33	2.83	1.92	1.41	2.42	5.75	5.33	9.42	W.	17.08	7.75	3.92	1.67	Fair.
Fort Howard	44.40	87.00	39.38	55.37	42.07	45.60	98	-16	114	2.42	2.17	5.33	1.17	0.83	4.17	5.17	9.00	W.	21.41	7.75	0.92	0.33	,,
Fort Preble	43.38	70.18	41.43	53.05	43.31	45.93	95	-8	103	2.42	5.17	2.75	1.58	3.75	4.92	6.17	3.67	S.W.	20.17	6.42	2.83	1.00	,,
F't Constitution	43.04	70.49	43.03	51.36	44.26	46.22	92	-8	100	2.00	7.16	3.66	1.42	1.17	8.00	2.58	4.42	N.W.	17.58	9.83	2.33	0.67	,,
Fort Wolcott	41.30	71.18	46.25	53.97	48.96	49.73	86	-2	88	2.33	9.58	4.83	0.42	2.25	0.58	9.50	0.92	S.W.	14.33	7.33	6.92	1.83	Cl'dy.
Fort Armstrong	41.28	90.33	47.80	57.84	49.86	51.83	94	-6	100	3.83	5.42	2.58	2.75	2.08	6.83	4.08	2.83	S.	22.50	6.17	1.50	0.25	Fair.
West Point	41.22	73.57	47.09	58.83	49.06	51.66	101	-10	111	4.50	8.25	2.17	0.50	4.83	4.00	3.92	2.25	N.W.	17.83	7.00	4.33	1.16	,,
Fort Trumbull	41.22	72.05	49.85	55.46	53.99	53.10	88	0	88	2.08	4.67	5.00	1.33	3.25	3.83	7.16	3.83	S.W.	17.00	6.08	6.25	1.08	,,
Fort Columbus	40.42	74.02	48.13	57.21	50.00	51.77	96	0	96	3.75	7.50	3.25	1.08	5.08	3.50	3.08	3.17	N.W.	17.33	7.50	4.83	0.75	,,
Washington city	38.41	76.55	53.22	63.67	56.65	57.84	98	9	89	1.75	9.00	5.25	0.58	4.00	2.58	6.00	1.00	N.W.	14.75	9.08	6.25	0.33	Cl'dy.
Jefferson Bar'ks	38.28	90.08	54.42	65.61	57.78	59.27	94	8	86	3.25	4.92	0.58	1.92	3.42	6.67	4.25	5.42	S.	17.75	6.58	4.83	0.92	Fair.
Fortress Monroe	37.02	76.12	55.43	64.91	60.77	60.37	94	13	81	2.00	3.00	6.92	3.42	5.33	1.92	6.16	1.67	N.E.	16.67	8.16	5.58	-	,,
Augusta Arsl.	33.28	81.53	61.28	73.22	65.94	66.81	102	26	76	2.08	2.58	3.16	3.00	4.17	3.67	6.50	4.50	S.W.	16.58	6.75	7.08	-	,,
Canton. Jesup	31.30	93.47	63.96	75.46	68.25	69.22	95	24	71	1.25	4.83	6.50	3.58	8.17	2.67	2.17	1.17	S.E.	17.67	5.41	7.33	-	,,
Canton. Clinch	30.24	87.14	66.12	74.26	70.58	70.32	92	24	68	3.50	3.16	1.75	0.67	5.58	5.08	9.58	1.08	S.W.	19.67	4.67	6.08	-	,,
Petite Coquille	30.10	89.38	65.99	76.97	69.42	70.79	95	23	72	1.00	3.33	5.08	6.83	4.67	3.83	3.67	2.00	E.	22.42	6.25	1.75	-	,,
Canton. Brooke	27.57	82.35	69.68	81.37	71.49	74.19	94	26	68	0.25	1.67	1.83	1.25	5.83	3.83	3.33	12.42	W.	23.83	3.00	3.58	-	,,

No. I. JANUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	12.70	25.12	17.48	18.43	44	-20	64	1	6	-	5	9	1	3	6	S.E.	6	5	1	19	Cl'dy.
Fort Snelling	3.58	19.35	8.32	10.42	38	-22	60	5	8	-	-	-	6	5	7	N.W.	20	5	-	6	Fair.
Fort Howard	16.32	23.19	17.41	18.97	39	-20	59	4	5	2	1	-	12	5	2	S.	19	6	1	5	Fair.
Fort Preble	23.29	30.45	27.32	27.02	50	2	48	2	5	4	3	9	-	6	2	S.E.	13	16	2	-	Cl'dy.
Fort Constitution	25.51	34.54	28.35	29.37	51	1	50	3	7	4	2	-	3	2	10	W.	16	14	-	1	"
Fort Wolcott	32.35	37.19	34.29	33.95	48	6	42	4	11	5	2	3	1	3	2	N.W.	14	8	7	2	Cl'dy.
Fort Armstrong	19.67	28.67	24.51	24.28	44	-6	50	5	5	2	5	3	5	2	4	N.	19	10	1	1	Fair.
West Point	30.19	38.19	31.87	33.42	56	6	50	4	8	3	-	12	3	1	-	S.E.	16	10	2	3	"
Fort Trumbull	39.41	43.71	42.25	41.86	52	20	32	2	7	5	-	9	2	5	1	S.E.	10	11	1	3	Cl'dy.
Fort Columbus	30.80	36.93	34.03	33.59	54	9	43	5	7	8	3	-	2	4	2	N.E.	12	16	3	-	"
Washington city	37.74	44.84	40.80	41 13	66	16	50	-	8	7	-	6	4	5	1	N.W.	8	11	10	2	"
Jefferson Barracks	31.19	42.16	38.77	37.17	72	10	62	2	6	1	1	1	10	3	7	S.	10	17	4	-	"
Fortress Monroe	45.38	53.80	49.96	49.71	67	32	35	2	6	10	-	-	-	9	4	N.E.	12	11	8	-	"
Fort Gibson	38.83	49.74	44.32	44.26	70	19	51	7	1	4	2	13	2	2	-	S.E.	13	17	-	1	"
Augusta Arsl.	48.96	60.25	54.03	54.41	75	34	41	3	3	3	3	7	4	6	2	S.E.	18	4	9	-	Fair.
Canton. Jesup	51.96	59.48	55.48	55.64	78	32	46	-	5	10	1	6	3	6	-	N.E.	9	4	17	1	Cl'dy.
Canton. Clinch	59.16	65.00	62.74	62.30	76	37	39	7	1	2	-	13	7	-	1	S.E.	9	13	9	-	"
Petite Coquille	57.00	63.00	60.00	60.00	80	36	44	1	9	4	12	1	1	-	3	S.E.	13	18	-	-	"
St. Augustine	66.09	71.19	66.03	67.77	83	49	34	8	-	3	-	9	8	1	2	S.E.	18	13	-	-	Fair.
Canton. Brooke	64.77	76.12	68.41	69.77	84	50	34	11	-	-	-	2	2	5	13	W.	30	-	1	-	"

No. II. FEBRUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	12.00	28.48	20.51	20.33	46	-17	63	2	8	2	8	4	-	1	4	E.	11	2	2	14	Cl'dy.
Fort Snelling	8.45	26.96	14.00	16.80	50	-22	72	2	8	-	1	1	6	5	6	N.W.	13	6	-	10	"
Fort Howard	19.06	29.86	21.51	23.48	49	-12	51	9	3	-	-	-	13	-	4	S.	18	11	-	-	Fair.
Fort Preble	30.58	37.58	33.13	33.76	50	10	40	3	8	1	-	3	6	6	2	N.W.	14	9	4	2	Cl'dy.
Fort Constitution	31.10	41.06	34.24	35.47	59	13	46	-	7	2	1	1	5	9	4	S.W.	14	14	1	-	"
Fort Wolcott	36.03	42.00	38.00	38.68	52	19	33	3	7	3	-	4	2	8	2	S.W.	11	7	7	4	"
Fort Armstrong	26.44	36.79	31.00	31.08	58	-2	60	3	4	4	2	2	8	2	4	S.	22	5	1	1	Fair.
West Point	34.58	44.93	38.65	39.39	65	8	57	4	7	1	3	4	6	3	1	N.W.	16	7	4	2	"
Fort Trumbull	41.86	46.37	44.75	44.33	56	28	28	-	6	1	2	4	3	9	4	S.W.	11	6	10	2	Cl'dy.
Fort Columbus	36.65	44.72	42.58	41.32	60	17	43	1	16	3	-	3	-	6	-	N.W.	11	15	3	-	"
Washington city	41.13	55.48	45.16	47.26	65	23	42	1	9	4	-	7	2	5	1	N.W.	13	5	11	-	"
Jefferson Barracks	38.31	48.38	41.76	42.82	70	12	58	-	12	2	3	4	2	1	5	N.W.	14	12	2	1	"
Fortress Monroe	48.93	57.20	54.41	53.51	71	38	33	1	7	7	3	2	3	6	-	N.W.	14	8	7	-	"
Fort Gibson	40.55	54.89	47.44	47.63	69	26	43	2	5	1	3	16	-	2	-	S.E.	15	11	2	1	Fair.
Augusta Arsl.	52.00	63.55	57.44	57.66	76	42	34	6	4	4	1	3	6	3	2	S.	8	9	12	-	Cl'dy.
Canton. Jesup.	55.44	64.31	56.82	58.86	86	36	50	2	2	5	2	9	7	1	1	S.E.	13	1	15	-	"
Canton. Clinch	60.89	67.37	65.13	61.13	76	48	28	3	3	4	4	2	1	12	-	S.W.	13	6	10	-	"
Petite Coquille	60.00	68.00	66.00	64.67	75	44	31	1	4	3	7	1	4	4	5	S.E.	22	1	6	-	Fair.
St. Augustine	71.94	74.37	68.51	71.61	84	52	32	1	3	5	1	7	6	3	3	S.E.	20	8	1	-	"
Canton. Brooke	65.17	78.96	70.40	71.51	82	50	32	4	-	-	-	5	4	10	6	S.W.	25	-	4	-	"

No. III. MARCH.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	19.19	40.09	26.90	28.73	58	-15	73	3	6	2	3	13	2	2	-	S.E.	15	5	3	8	Fair.
Fort Snelling	25.51	41.38	29.83	32.24	56	-18	74	-	8	-	3	1	11	2	6	S.	20	4	3	4	"
Fort Howard	26.87	41.87	31.06	36.60	70	-10	80	4	5	-	-	1	13	4	4	S.	22	9	-	-	"
Fort Preble	30.06	41.00	33.42	34.83	54	10	44	-	10	4	-	9	2	6	-	N.W.	16	11	3	1	"
Fort Constitution	31.96	42.51	33.96	36.14	66	14	52	1	9	3	4	1	7	2	3	N.W.	18	11	1	1	"
Fort Wolcott	35.19	45.77	39.35	40.10	61	17	44	11	5	5	1	2	2	3	2	N.	19	6	3	3	"
Fort Armstrong	34.93	44.38	37.77	35.69	74	6	68	3	1	6	4	1	13	1	2	S.	23	6	1	1	"
West Point	35.83	49.35	40.12	41.77	82	16	66	4	9	3	3	5	3	3	1	N.W.	16	8	5	2	"
Fort Trumbull	40.51	46.93	45.16	43.20	64	26	48	2	5	4	2	6	4	6	2	S.W.	16	8	5	2	"
Fort Columbus	36.96	45.70	39.58	40.75	76	24	52	5	6	5	11	-	-	2	2	E.	17	12	2	-	"
Washington city	40.70	55.29	46.58	47.52	76	23	53	1	7	5	2	9	4	2	1	S.E.	14	10	7	-	Cl'dy.
Jefferson Barracks	42.38	57.70	48.22	49.43	80	14	66	3	11	-	1	-	6	8	2	N.W.	16	12	2	1	Fair.
Fortress Monroe	48.35	56.83	53.12	52.77	71	30	41	3	3	6	-	11	-	6	2	S.E.	15	12	4	-	Cl'dy.
Fort Gibson	47.71	62.38	54.12	54.74	82	28	54	2	8	1	1	19	-	-	-	S.E.	13	17	1	-	"
Augusta Arsl.	52.41	66.87	59.03	59.47	79	33	46	4	2	2	1	8	10	2	2	S.	12	10	9	-	"
Canton. Jesup	55.29	67.93	60.35	61.19	82	42	40	9	2	4	2	4	8	1	1	N.	20	3	8	-	Fair.
Canton. Clinch	59.66	67.53	61.63	62.94	75	40	35	1	5	1	-	8	3	12	1	S.W.	20	4	7	-	"
Petite Coquille	65.00	65.00	63.00	64.33	78	52	26	2	6	8	5	1	4	2	3	S.E.	21	5	5	-	"
St. Augustine	60.32	68.93	63.38	64.21	80	46	34	4	3	7	1	11	1	4	-	S.E.	27	1	3	-	"
Canton. Brooke	60.06	75.42	68.06	64.51	82	46	36	6	1	-	3	4	1	3	13	W.	30	-	1	-	"

No. IV. APRIL.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	34.33	48.56	35.16	39.35	66	13	53	1	13	1	10	-	1	-	4	N.W.	16	6	4	4	Fair.
Fort Snelling	40.10	52.63	42.40	45.04	78	18	60	1	6	1	6	6	4	1	5	E.	15	5	5	5	Equal.
Fort Howard	36.50	50.33	38.70	41.84	70	21	49	13	5	5	-	1	4	-	2	N.	14	11	2	3	Cl'dy.
Fort Preble	38.33	51.73	39.00	43.02	58	36	22	5	3	4	1	4	2	8	3	S.W.	20	5	4	1	Fair.
Fort Constitution	40.00	48.30	40.43	42.91	61	32	29	2	10	7	3	-	3	2	3	N.W.	17	10	2	1	„
Fort Wolcott	40.13	57.30	43.36	44.93	65	31	34	9	6	4	3	1	-	3	4	N.	11	14	2	3	Cl'dy.
Fort Armstrong	43.76	55.23	45.76	48.25	79	20	59	5	2	6	7	2	4	1	3	E.	19	10	-	1	Fair.
West Point	41.23	55.40	46.53	47.72	68	32	36	6	11	4	1	5	-	3	-	N.W.	17	8	3	2	„
Fort Trumbull	45.36	51.63	49.60	48.86	60	41	19	2	8	6	1	4	1	8	-	S.W.	16	11	3	-	„
Fort Columbus	41.10	50.36	44.36	45.27	69	32	37	2	8	8	2	2	1	4	3	N.W.	10	15	3	2	Cl'dy.
Washington city	45.40	56.66	49.26	50.44	70	32	38	-	15	6	1	5	1	2	-	N.W.	9	10	10	1	„
Jefferson Barracks	49.70	62.76	55.10	55.85	83	24	59	2	10	1	1	2	3	4	7	N.W.	19	2	8	1	Fair.
Fortress Monroe	55.56	61.53	58.50	58.53	71	41	30	2	6	12	-	2	-	5	3	N.E.	13	9	7	1	Cl'dy.
Fort Gibson	53.16	65.23	58.80	59.06	82	28	54	1	5	2	1	21	-	-	-	S.E.	18	7	5	-	Fair.
Augusta Arsl.	57.90	71.80	63.13	64.28	89	35	54	3	4	-	-	5	2	10	6	S.W.	19	8	3	-	„
Canton. Jesup	59.30	72.50	63.10	64.97	85	35	50	2	3	9	5	2	4	5	-	N.E.	20	1	9	-	„
Canton. Clinch	60.06	70.46	66.13	65.55	79	38	51	-	4	2	-	6	8	9	1	S.W.	24	3	3	-	„
Petite Coquille	67.96	72.83	70.63	70.47	85	49	36	-	-	1	11	9	1	2	6	E.	25	2	3	-	„
St. Augustine	66.43	72.73	67.70	68.95	86	30	56	-	3	10	-	13	-	3	1	S.E.	24	3	3	-	„
Canton. Brooke	62.83	77.50	69.20	69.84	90	40	50	5	3	2	1	4	-	7	8	W.	21	4	5	-	„

No. V. MAY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	58.51	70.25	54.93	61.23	77	34	43	1	6	1	11	1	-	3	8	E.	13	1	16	1	Cl'dy.
Fort Snelling	57.74	66.90	56.19	60.28	76	36	40	1	7	3	5	1	8	5	1	S.	19	2	9	1	Fair.
Fort Howard	50.32	68.83	51.22	56.79	82	30	52	7	3	6	-	-	14	1	-	S.	20	10	1	-	"
Fort Preble	51.25	58.51	48.83	52.86	68	40	28	4	1	7	3	10	4	2	-	S.E.	10	11	10	-	Cl'dy.
Fort Constitution	49.25	68.19	50.32	59.25	74	43	29	-	5	12	2	1	7	1	3	N.E.	15	10	6	-	"
Fort Wolcott	51.41	63.80	53.87	56.36	75	42	33	7	4	2	5	5	-	6	2	N.	14	9	8	-	"
Fort Armstrong	60.06	68.61	57.41	62.03	79	42	37	4	-	4	2	2	11	1	7	S.	21	6	4	-	Fair.
West Point	56.54	70.00	59.74	61.76	80	48	32	2	10	4	-	3	4	5	3	N.W.	14	11	6	-	Cl'dy.
Fort Trumbull	57.71	61.51	59.06	59.43	69	52	17	1	4	6	2	9	1	5	3	S.E.	14	9	8	-	"
Fort Columbus	56.16	66.87	57.18	60.07	78	44	34	2	5	3	2	6	7	3	3	S.	18	5	8	-	Fair.
Washington city	61.61	73.54	65.72	66.96	86	48	38	1	13	3	1	2	9	2	-	N.W.	12	12	7	-	Cl'dy.
Jefferson Barracks	64.70	78.00	67.38	70.03	90	52	38	9	3	3	2	5	3	5	1	N.	25	2	4	-	Fair.
Fortress Monroe	66.22	74.06	70.54	70.27	84	60	24	1	-	12	-	5	1	8	4	N.E.	23	4	4	-	"
Fort Gibson	65.67	79.42	69.00	71.36	86	54	32	-	2	-	-	29	-	-	-	S.E.	17	9	5	-	"
Augusta Arsl.	70.96	83.09	75.67	76.57	94	63	31	2	5	5	-	7	3	3	6	S.E.	19	4	8	-	"
Canton. Jesup	70.29	80.87	73.67	74.94	92	60	32	4	-	4	3	5	8	5	2	S.	24	1	6	-	"
Canton. Clinch	72.41	80.32	75.67	76.13	90	65	25	-	4	1	-	1	3	22	-	S.W.	20	1	10	-	"
Petite Coquille	76.35	81.69	79.19	79.08	90	70	20	1	2	-	8	6	3	5	6	E.	24	1	6	-	Fair.
St. Augustine	75.22	80.45	76.38	77.32	90	71	19	3	-	8	1	14	1	3	1	S.E.	24	3	4	-	"
Canton. Brooke	71.64	80.09	76.48	76.07	90	66	24	-	5	3	3	3	3	11	3	S.W.	24	-	7	-	Cl'dy.

No. VI. JUNE.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	49.23	61.53	47.63	52.80	91	39	52	-	1	2	9	4	1	2	11	W.	15	5	10	-	Equal.
Fort Snelling	66.40	79.06	70.00	71.82	92	56	36	-	2	-	1	8	8	5	6	S.	21	-	9	-	Fair.
Fort Howard	67.73	75.26	66.20	69.73	90	48	42	3	4	2	-	5	4	9	3	S.W.	18	11	1	-	"
Fort Preble	63.86	75.96	62.10	67 31	90	48	42	-	3	1	3	6	7	8	2	S.	15	7	8	-	Equal.
Fort Constitution	63.30	69.06	59.80	64.05	90	50	40	1	1	5	2	2	15	2	2	S.	13	16	1	-	Cl'dy.
Fort Wolcott	63.86	72.70	65.80	67.45	81	53	28	-	1	-	1	6	6	16	-	S.W.	13	11	6	-	"
Fort Armstrong	73.54	81.03	72.06	75.54	94	54	40	-	1	3	1	3	16	1	5	S.	27	3	-	-	Fair.
West Point	68.80	82.20	70.56	73.85	98	58	40	1	5	-	-	4	9	8	3	S.	21	7	2	-	"
Fort Trumbull	65 83	73.33	71.13	70.10	82	61	21	-	1	2	3	7	9	7	1	S.	14	10	6	-	Cl'dy.
Fort Columbus	68.33	79.60	68.86	72.26	90	60	30	-	2	2	-	8	6	10	2	S.W.	18	10	2	-	Fair.
Washington city	74.96	85.36	77.56	79.29	93	64	29	2	4	1	-	7	9	6	1	S.	21	4	5	-	"
Jefferson Barracks	77.30	87.83	76.93	80.69	100	66	34	1	3	3	-	11	1	11	-	S.E.	20	-	10	-	"
Fortress Monroe	76.00	83.96	77.30	79.09	91	68	23	-	1	4	2	6	2	14	1	S.W.	19	5	6	-	"
Fort Gibson	77.06	88.20	78.23	81.16	96	66	30	-	1	-	-	26	-	3	-	S.E.	22	4	4	-	"
Augusta Arsl.	80.63	87.63	81.86	83.37	95	62	33	2	9	2	-	7	1	6	3	N.W.	19	4	7	-	"
Canton. Jesup	76.86	90.43	81.10	82.79	97	66	31	-	1	4	-	5	8	11	1	S.W.	23	3	4	-	"
Canton. Clinch	77.23	84.13	81.76	81.04	94	72	22	-	2	3	-	-	-	23	2	S.W.	20	4	6	-	"
Petite Coquille	81.40	86.73	82.16	83.43	93	77	16	-	2	1	2	8	1	7	9	W.	20	6	4	-	"
St. Augustine	79.73	84.03	80.53	81.43	88	74	14	-	1	4	-	23	-	2	-	S.E.	14	6	10		Cl'dy.
Canton. Brooke	74.96	87.43	80.03	80.47	94	70	24	-	6	1	5	2	1	8	7	S.W.	21	-	9		Fair.

No. VII. JULY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	61.67	69.96	59.96	67.20	81	47	34	1	1	6	-	-	6	12	5	W.	15	7	9	-	Cl'dy.
Fort Snelling	75.09	82.64	71.48	76.40	90	61	29	1	4	-	-	1	9	4	12	W.	29	-	2	-	Fair.
Fort Howard	65.54	78.29	65.42	69.75	92	56	36	1	2	3	-	4	13	7	1	S.	17	10	4	-	"
Fort Preble	66.25	80.67	65.64	70.85	88	59	29	-	-	-	2	3	16	5	5	S.	22	4	5	-	"
Fort Constitution	66.58	74.77	66.12	69.16	87	50	37	-	2	2	3	1	9	8	6	S.	19	10	2	-	"
Fort Wolcott	67.83	75.83	70.74	71.47	85	62	23	1	5	1	1	3	3	13	4	S.W.	13	11	7	-	Cl'dy.
Fort Armstrong	76.38	83.80	70.38	76.85	94	63	31	6	2	1	1	2	11	4	4	S.	29	2	-	-	Fair.
West Point	71.06	83.64	71.54	75.41	96	64	32	3	10	-	-	1	6	7	4	N.W.	18	6	7	-	"
Fort Trumbull	71.77	77.32	74.61	74.57	86	67	19	-	-	-	-	5	9	17	-	S.W.	25	6	-	-	"
Fort Columbus	70.64	82.58	70.80	74.67	99	63	36	-	1	1	-	4	8	9	8	S.W.	21	3	7	-	"
Washington city	73.90	84.41	76.03	78.11	94	66	28	-	11	1	-	3	4	11	1	S.W.	16	8	7	-	"
Jefferson Barracks	73.03	87.96	77.25	79.41	98	62	36	-	10	11	-	9	-	1	-	N.E.	26	1	4	-	"
Fortress Monroe	75.90	82.93	79.90	79.58	91	69	22	-	1	5	-	2	-	20	3	S.W.	18	7	6	-	"
Fort Gibson	76.19	90.83	78.22	81.75	101	70	31	-	2	3	3	19	1	3	-	S.E.	23	8	-	-	"
Augusta Arsl.	76.48	86.67	81.83	81.66	96	65	31	1	10	-	-	1	-	14	5	S.W.	22	4	5	-	"
Canton. Jesup	77.22	91.25	81.61	83.33	97	75	22	10	4	4	-	5	3	5	-	N.	28	3	-	-	"
Canton. Clinch	77.54	87.38	81.67	82.20	92	70	22	4	7	-	-	2	3	15	-	S.W.	20	5	6	-	"
Petite Coquille	80.83	86.19	82.77	83.26	92	74	18	1	4	3	4	5	1	9	4	S.W.	22	2	7	-	"
St. Augustine	79.58	84.19	81.16	81.64	90	76	14	-	1	5	1	18	1	2	3	S.E.	15	8	8	-	Cl'dy.
Canton. Brooke	76.77	86.64	80.09	81.17	94	70	24	1	2	-	1	4	5	15	8	S.W.	17	-	14	-	Fair.

No. VIII. AUGUST.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	60.71	73.00	60.87	64.86	86	49	37	-	2	5	4	1	5	12	2	W.	15	11	5	-	Cl'dy.
Fort Snelling	72.19	81.03	70.16	74.46	88	58	30	2	1	-	-	1	9	8	10	W.	26	4	1	-	Fair.
Fort Howard	64.03	77.51	67.54	69.69	92	48	44	2	3	6	-	5	11	2	2	S.	14	3	14	-	Cl'dy.
Fort Preble	66.45	80.83	64.70	70.66	90	58	32	-	5	1	2	5	9	5	4	S.	26	1	4	-	Fair.
Fort Constitution	65.70	73.25	66.22	68.36	86	58	28	-	4	3	1	2	14	2	5	S.	26	5	-	-	"
Fort Wolcott	68.41	77.74	71.96	72.70	86	63	23	2	3	1	1	2	5	13	4	S.W.	22	5	4	-	"
Fort Armstrong	75.03	84.16	71.00	76.73	95	64	31	-	1	2	4	3	14	1	6	S.	28	2	1	-	"
West Point	70.96	85.41	73.38	76.58	90	63	27	1	6	-	-	1	9	9	5	S.W.	27	1	3	-	"
Fort Trumbull	71.80	77.72	75.00	74.84	86	65	21	1	5	3	1	2	2	17	-	S.W.	26	2	3	-	"
Fort Columbus	72.00	85.61	71.90	76.50	95	63	32	-	1	3	1	2	13	4	7	S.	24	4	3	-	"
Washington city	73.74	85.32	78.22	79.09	93	65	28	-	7	4	-	5	12	3	-	S.	17	8	6	-	"
Jefferson Barracks	73.09	91.80	79.80	81.56	100	64	36	-	4	4	-	13	-	9	1	S.E.	22	1	8	-	"
Fortress Monroe	76.96	83.87	80.71	80.51	91	71	20	-	-	5	1	7	3	9	6	S.W.	21	5	5	-	"
Fort Gibson	76.77	91.48	77.87	82.04	100	71	29	-	-	1	3	24	2	1	-	S.E.	22	9	-	-	"
Augusta Arsl.	76.70	87.09	81.03	81.61	95	72	23	3	7	7	-	6	2	2	4	N.W.	5	19	7	-	Cl'dy
Canton. Jesup	77.32	88.61	80.41	82.11	96	72	24	2	-	11	-	7	6	4	1	N.E.	14	17	-	-	"
Canton. Clinch	78.58	86.80	81.22	82.20	91	74	17	2	5	2	2	2	3	13	2	S.W.	14	-	17	-	"
Petite Coquille	80.83	86.09	83.03	83.32	92	74	18	1	1	2	10	4	2	9	2	E.	13	4	14	-	"
St. Augustine	80.54	84.64	80.83	82.00	87	78	9	-	2	-	1	24	-	4	-	S.E.	13	10	8	-	"
Canton. Brooke	76.87	88.25	80.16	81.70	94	74	20	-	1	-	5	5	12	8	-	S.	17	-	14	-	Fair.

No. IX. SEPTEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	52.26	62.06	50.23	54.85	76	38	38	2	2	6	2	1	7	8	2	W.	10	10	10	-	Cl'dy.
Fort Snelling	55.30	65.90	55.30	58.83	78	44	34	4	2	1	1	2	3	7	10	W.	22	6	2	-	Fair.
Fort Howard	48.60	63.60	53.70	55.30	79	35	34	7	1	1	-	6	9	3	3	S.	9	14	7	-	Cl'dy.
Fort Preble	58.60	68.53	59.40	62.18	68	48	20	1	2	9	3	5	9	1	-	N.E.	17	11	2	-	Fair.
Fort Constitution	58.36	68.23	60.13	62.24	79	50	29	2	1	7	4	2	7	4	3	S.	17	10	3	-	"
Fort Wolcott	62.26	70.53	65.00	65.93	82	56	26	6	3	4	1	2	2	12	-	S.W.	17	8	5	-	"
Fort Armstrong	56.20	69.26	57.06	60.84	82	44	38	8	3	1	3	4	6	2	3	N.	19	8	3	-	"
West Point	65.23	71.66	69.03	68.64	90	58	32	3	6	1	-	3	4	8	5	S.W.	20	2	8	-	"
Fort Trumbull	66.83	71.80	69.26	69.30	86	60	26	3	-	10	3	4	2	6	2	N.E.	15	9	6	-	Equal.
Fort Columbus	61.26	76.70	62.40	66.79	92	53	39	1	2	8	1	1	4	8	5	S.W.	21	2	7	-	Fair.
Washington city	62.13	74.23	65.86	67.41	94	50	44	1	9	4	-	5	8	2	1	N.W.	15	9	6	-	Equal.
Jefferson Barracks	61.93	74.40	66.33	67.89	86	52	34	-	6	6	-	10	-	7	1	S.E.	24	-	6	-	Fair.
Fortress Monroe	69.56	73.46	70.90	71.31	83	59	24	2	2	14	2	3	-	4	3	N.E.	13	9	8	-	Cl'dy.
Fort Gibson	64.13	79.73	65.30	69.72	92	48	44	8	1	-	2	18	1	-	-	S.E.	19	11	-	-	Fair.
Augusta Arsl.	65.53	78.96	71.90	72.13	88	58	30	3	9	8	-	2	1	5	2	N.W.	12	16	2	-	Cl'dy.
Canton. Jesup	67.80	80.63	71.93	73.45	90	62	28	6	1	16	3	1	2	1	-	N.E.	19	8	3	-	Fair.
Canton. Clinch	70.26	82.33	76.06	76.22	87	56	31	2	3	4	2	5	4	10	-	S.W.	24	1	5	-	"
Petite Coquille	74.76	82.03	79.06	78.62	88	65	23	-	5	5	7	6	1	2	4	E.	24	2	4	-	"
St. Augustine	77.43	82.30	79.26	79.66	85	72	13	-	2	8	1	17	-	2	-	S.E.	15	7	8	-	Equal.
Canton. Brooke	73.96	86.10	77.93	79.33	92	68	24	-	-	-	8	10	2	6	4	S.E.	22	-	8	-	Fair.

No. X. OCTOBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.																		
	VII.	II.	IX.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
Fort Brady	43.03	51.35	42.22	45.53	70	27	43	1	2	7	4	4	2	9	2	S.W.	10	14	5	2	Cl'dy.
Fort Snelling	42.00	60.25	48.12	50.12	80	28	52	3	4	-	1	2	2	8	11	W.	27	3	1	-	Fair.
Fort Howard	38.80	58.58	47.90	48.43	82	24	58	7	1	1	-	3	7	7	5	S.W.	16	15	-	-	"
Fort Preble	44.12	57.38	45.80	49.10	68	28	40	-	5	-	1	3	16	5	1	S.	17	10	4	-	"
Fort Constitution	44.61	57.25	49.35	50.40	74	30	44	-	8	1	1	3	8	5	5	N.W.	18	12	1	-	"
Fort Wolcott	49.96	58.80	53.93	54.23	67	34	33	-	12	5	1	1	1	10	1	N.W.	15	12	4	-	Cl'dy.
Fort Armstrong	49.03	60.93	52.90	54.29	82	34	48	5	2	1	2	3	14	-	4	S.	30	1	-	-	Fair.
West Point	50.19	61.67	55.12	55.99	73	30	43	-	13	-	1	3	5	5	4	N.W.	21	7	3	-	"
Fort Trumbull	55.09	60.19	58.83	58.04	70	44	26	1	5	1	5	4	2	8	5	S.W.	22	6	3	-	"
Fort Columbus	48.09	60.00	52.09	53.39	71	33	38	2	8	2	3	3	5	7	1	N.W.	22	6	3	-	"
Washington city	45.80	64.09	54.48	54.79	76	27	49	-	8	5	-	1	12	4	1	S.	19	9	3	-	"
Jefferson Barracks	43.29	59.22	49.74	50.75	70	34	36	-	2	3	2	8	2	11	3	S.W.	26	3	2	-	"
Fortress Monroe	60.45	66.16	63.25	63.29	70	49	21	1	2	13	1	5	2	4	3	N.E.	17	8	6	-	"
Fort Gibson	60.19	77.03	60.83	66.02	90	46	44	-	6	-	-	25	-	-	-	S.E.	22	7	2	-	"
Augusta Arsl.	57.93	71.35	84.93	71.40	81	41	40	7	13	5	1	1	-	2	2	N.W.	22	6	3	-	"
Canton. Jesup	61.74	76.29	65.22	67.75	84	48	36	4	4	7	5	4	3	4	-	N.E.	23	7	1	-	"
Canton. Clinch	62.87	76.90	68.83	69.53	83	46	37	7	1	5	3	6	5	4	-	N.	28	-	3	-	"
Petite Coquille	70.80	76.80	74.51	74.04	84	56	28	1	7	2	11	2	-	2	6	E.	26	2	3	-	"
St. Augustine	69.74	75.06	71.29	72.03	80	56	24	3	3	13	1	9	-	2	-	N.E.	14	9	8	-	Cl'dy.
Canton. Brooke	67.29	82.25	72.29	73.94	86	47	39	2	5	3	7	4	-	10	-	S.W.	24	5	2	-	Fair.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	31.06	38.63	33.80	34.50	59	21	38	5	2	5	6	3	2	3	4	E.	5	25	-	-	Cl'dy.
Fort Snelling	30.70	40.23	34.60	35.18	55	18	37	2	6	3	-	1	2	5	11	W.	7	13	2	8	"
Fort Howard	30.93	38.73	34.13	34.60	53	15	38	-	6	6	1	1	1	10	5	S.W.	10	20	-	-	"
Fort Preble	36.40	43.66	37.33	39.13	58	22	36	3	5	1	-	4	8	4	5	S.	8	10	8	4	"
Fort Constitution	38.86	46.50	40.20	41.85	66	24	32	1	9	3	2	-	4	4	7	N.W.	17	9	4	-	Fair.
Fort Wolcott	43.16	48.96	45.20	45.77	65	26	39	1	11	4	2	1	1	9	1	N.W.	13	7	9	1	Cl'dy.
Fort Armstrong	37.50	47.13	38.03	40.89	62	30	32	6	1	1	5	2	10	2	3	S.	20	7	2	1	Fair.
West Point	41.56	49.43	44.10	45.03	68	24	44	2	9	-	1	5	6	6	1	N.W.	13	6	10	1	Cl'dy.
Fort Trumbull	49.40	53.56	51.66	51.54	67	40	27	3	4	1	5	5	3	3	6	W.	12	5	12	1	"
Fort Columbus	42.66	48.00	44.16	44.94	63	27	36	-	9	5	1	1	3	4	7	N.W.	19	1	9	1	Fair.
Washington city	42.60	52.80	46.60	47.33	70	29	41	-	10	5	-	5	6	4	-	N.W.	11	11	6	2	Cl'dy.
Jefferson Barracks	43.33	60.06	48.26	50.55	70	34	36	3	4	4	1	7	1	10	-	S.W.	25	1	3	1	Fair.
Fortress Monroe	54.13	59.90	56.90	56.98	82	38	44	3	2	9	1	2	-	8	5	N.E.	17	5	8	-	"
Fort Gibson	48.40	66.06	51.70	55.39	80	38	42	5	3	-	3	17	-	1	1	S.E.	24	6	-	-	"
Augusta Arsl.	53.50	60.80	55.93	56.74	75	41	34	1	9	3	-	-	2	10	5	S.W.	24	3	3	-	"
Cant. Jesup	53.26	67.63	57.40	59.43	80	30	50	3	8	3	1	7	3	3	2	N.W.	20	9	1	-	"
Cant. Clinch	57.43	67.76	60.80	62.00	80	36	44	1	11	2	-	2	8	4	2	N.W.	21	2	7	-	"
Petite Coquille	63.83	70.90	66.36	67.03	78	49	29	-	5	-	6	6	1	6	6	S.E.	23	3	4	-	"
St. Augustine	64.20	69.16	65.63	66.33	81	54	27	2	12	1	1	14	-	-	-	S.E.	24	2	4	-	"
Cant. Brooke	60.73	77.00	67.10	68.28	82	46	36	3	4	3	3	1	1	11	4	S.W.	26	-	4	-	"

No. XII. DECEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	19.67	28 29	23.25	23.74	42	2	40	2	7	8	-	-	4	5	5	N.E.	5	26	-	-	Cl'dy.
Fort Snelling	20.06	30.74	23.80	24.87	44	-3	47	6	4	2	-	1	2	5	11	W.	18	11	-	2	Fair.
Fort Howard	20.87	29.22	23.64	24.58	43	-6	49	2	5	1	1	1	3	12	6	S.W.	21	10	-	-	,,
Fort Preble	28.53	37.22	31.54	32.43	52	-2	54	-	7	2	1	1	8	9	3	S.W.	16	15	-	-	,,
Fort Constitution	31.00	40.64	33.38	35.01	57	4	53	-	11	-	1	-	-	13	6	S.W.	19	12	-	-	,,
Fort Wolcott	34.96	43.32	36.93	38.40	57	10	47	1	9	1	-	1	2	11	6	S.W.	5	14	12	-	Cl'dy.
Fort Armstrong	29.93	39.83	30.64	33.47	59	10	49	6	-	-	1	3	11	3	7	S.	25	5	1	-	Fair.
West Point	35.67	46.71	37.54	39 97	62	12	50	2	10	3	-	-	11	3	2	S.	23	.6	2	-	,,
Fort Trumbull	42.45	48.74	45.80	45.66	58	18	40	1	1	1	1	3	2	8	14	W.	22	5	4	-	,,
Fort Columbus	35.19	43.06	37.77	38.67	54	20	34	-	13	-	-	-	7	9	2	N.W.	24	4	3	-	,,
Washington city	35.77	49.09	40.35	41.74	62	18	44	1	13	3	-	2	8	4	-	N.W.	18	10	3	-	,,
Jefferson Barracks	38.35	52.87	43.32	44.85	60	30	30	10	1	3	-	9	2	5	1	N.	24	3	4	-	,,
Fortress Monroe	44.09	50.70	47.93	47.57	64	30	34	5	11	5	1	1	4	3	1	N.W.	22	5	4	-	,,
Fort Gibson	40.54	57.03	46.00	47.86	74	26	48	-	5	8	-	18	-	-	-	S.E.	20	5	6	-	,,
Augusta Arsl.	49.03	60.54	53.74	54.44	72	34	38	3	7	5	-	2	6	4	4	N.W.	21	4	6	-	,,
Canton. Jesup	49.71	60.00	54.00	54.57	74	34	40	5	8	6	-	7	2	3	-	N.W.	14	8	9	-	Cl'dy.
Canton. Clinch	59.00	66.00	61.00	62.00	75	50	25	-	6	4	2	-	12	3	4	S.	21	-	10	-	Fair.
Petite Coquille	61.96	68.06	62.83	64.28	80	48	32	2	4	6	8	6	-	2	3	E.	20	9	2	-	,,
St. Augustine	64.93	69.93	65.85	66.90	77	50	27	3	10	4	-	13	1	-	-	S.E.	15	7	9	-	Cl'dy.
Canton. Brooke	64.54	76.29	69.12	69.98	82	50	32	1	-	9	6	8	4	3	-	N.E.	25	1	5	-	Fair.

No. XIII. MEAN OF THE OBSERVATIONS FOR 1828.

PLACES OF OBSERVATION.	Latitude.	Longitude.	THERMOMETER. Mean Temperature. A.M. VII.	P.M. II.	P.M. IX.	Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	WINDS. N. Days.	N.W. Days.	N.E. Days.	E. Days.	S.E. Days.	S. Days.	S.W. Days.	W. Days.	Prevailing.	WEATHER. Fair. Days.	Cl'dy. Days.	Rain. Days.	Snow Days.	Prevailing.
Fort Brady	46 39	84.83	37.95	49.78	39.41	42.38	91	-20	111	1.59	4.67	3.75	5.17	3.33	2.59	5.00	4.42	S.W.	11.33	9.75	5.42	4.00	Cl'dy.
Fort Snelling	44.53	93.08	41.43	53.92	43.68	46.34	92	-22	114	2.25	5.00	0.83	1.50	2.08	5.83	5.00	6.00	W.	19.75	4.92	2.83	3.00	Fair.
Fort Howard	44.40	87-00	40.46	53.19	43.20	45.62	92	-20	112	4.92	3.58	2.75	0.25	2.25	8.67	5.00	3.08	S.	16.50	10.83	2.50	0.67	,,
Fort Preble	43.38	70.18	44.81	55.29	45.68	48.59	90	-2	92	1.50	4.50	2.83	1.58	5.17	7.25	5.42	2.25	S.	16.17	10.00	4.50	0.67	,,
F't Constitution	43.04	70.49	45.52	55.36	46.87	49.25	90	1	89	0.83	6.17	4.08	2.17	1.08	6.83	4.50	4.75	S.	16.25	11.25	2.75	0.25	,,
Fort Wolcott	41.30	71.18	48.80	57.33	51.53	52.55	86	6	80	3.75	6.42	2.92	1.50	2.58	2.08	8.92	2.33	N.W.	13.92	9.33	6.17	1.08	Cl'dy.
Fort Armstrong	41.28	90.33	48.54	58.33	49.04	51.97	95	-6	101	4.25	1.83	2.58	3.08	2.50	10.25	1.67	4.33	S.	23.50	5.42	1.17	0.42	Fair.
West Point	41.22	73.57	50.15	61.55	53.18	54.96	98	6	92	2.67	8.67	1.58	0.75	3.83	5.50	5.08	2.42	N.W.	18.50	6.58	4.58	0.83	,,
Fort Trumbull	41.22	72.05	54.00	59.40	57.26	56.89	86	18	68	1.33	3.83	3.33	2.08	5.17	3.33	7.00	4.58	S.W.	16.92	7.33	5.08	0.67	,,
Fort Columbus	40.42	74.02	49.99	60.01	52.14	54.05	99	9	90	1.50	6.50	4.00	2.00	2.50	4.67	5.83	3.50	N.W.	18.08	7.75	4.42	0.25	,,
Washington city	38.41	76.55	52.96	65.18	57.22	58.45	94	16	78	0.58	9.50	4.00	0.33	4.75	6.58	4.17	0.58	N.W.	14.42	8.92	6.75	0.42	Cl'dy.
Jefferson Bar'ks	38.28	90.08	53.05	66.93	57.74	59.24	100	10	90	2.50	6.00	3.42	0.92	6.58	2.50	6.58	2.00	S.W.	20.83	4.50	4.75	0.33	Fair.
Fortress Monroe	37.02	76.12	60.13	67.03	63.62	63.59	91	30	61	1.67	3.42	8.50	0.92	3.83	1.25	8.00	2.92	N.E.	17.00	7.33	6.08	0.08	,,
Fort Gibson	35.30	95.10	57.43	71.83	60.99	63.42	101	19	82	2.08	3.25	1.67	1.50	20.42	0.50	1.00	0.08	S.E.	19.00	9.25	2.08	0.17	,,
Augusta Arsl.	33.28	81.53	61.84	73.22	68.38	67.81	96	34	62	3.17	6.83	3.67	0.50	4.08	3.08	5.58	3.58	N.W.	16.75	7.58	6.17	0.00	,,
Canton. Jesup	31.30	93.47	63.02	74.99	66.76	68.26	97	30	67	3.92	3.17	6.92	1.83	5.17	4.75	4.08	0.67	N.E.	18.92	5.42	6.08	0.08	,,
Canton. Clinch	30.24	87.14	66.26	75.16	70.22	70.55	94	36	58	2.25	4.33	2.50	1.08	3.92	4.75	10.58	1.08	S.W.	19.50	3.25	7.75	0.00	,,
Petite Coquille	30.10	89.38	70.06	75.61	72.46	72.71	93	36	57	0.83	4.08	2.92	7.58	4.58	1.58	4.17	4.75	E.	21.18	4.58	4.00	0.00	,,
St. Augustine	29.48	81.35	71.35	76.41	72.21	73.32	90	30	60	2.00	3.33	5.67	0.67	14.33	1.50	2.17	0.83	S.E.	18.58	6.42	5.50	-	,,
Canton. Brooke	27.57	82.35	68.30	81.00	73.27	74.19	94	40	54	2.75	2.25	1.75	3.50	4.33	2.92	8.08	5.08	S.W.	23.50	0.83	6.17	-	,,

No. I.

JANUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Barracks	7.16	15.16	13.25	11.86	47	-24	71	2	14	9	-	6	-	-	-	N.W.	21	-	3	7	Fair.
Fort Snelling	10.80	21.16	15.96	15.97	38	-18	56	-	7	1	-	2	3	11	7	S.W.	24	6	-	1	"
Fort Howard	13.64	24.93	18.29	18.95	49	-8	57	5	5	5	1	1	-	12	2	S.W.	13	18	-	-	Cl'dy.
Fort Preble	16.00	25.35	20.71	20.69	40	-6	46	6	7	4	2	-	3	6	3	N.W.	14	12	4	1	"
Fort Niagara	25.22	31.48	26.64	27.78	54	3	51	2	7	5	1	1	10	4	1	S.	15	10	1	5	"
Fort Constitution	20.87	28.94	23.32	24 38	50	-6	56	6	9	4	-	-	2	3	7	N.W.	13	13	3	2	"
Fort Wolcott	25.51	33.58	27.61	28.90	50	6	44	3	7	3	3	1	1	8	5	S.W.	14	10	5	2	"
Fort Armstrong	20.92	33.22	23.12	25.75	55	-2	57	13	1	-	4	4	6	1	2	N.	22	8	-	1	Fair.
West Point	23.51	32.64	25.16	27 10	56	0	56	2	15	3	1	4	-	5	1	N.W.	15	4	6	6	Cl'dy.
Fort Columbus	25.03	29.51	26.61	27.05	44	7	37	-	12	11	-	4	-	4	-	N.W.	21	1	5	4	Fair.
Washington city	27.58	38.77	31.87	32.74	54	12	42	1	11	7	-	7	3	2	-	N.W.	14	10	3	4	Cl'dy.
Jefferson Barracks	30.61	43.12	35.19	36.31	56	14	42	9	8	7	-	2	2	3	-	N.	22	4	3	2	Fair.
Fortress Monroe	37.16	45.48	41.77	41.47	60	21	39	11	6	6	1	3	-	2	2	N.	16	9	6	-	"
Fort Gibson	34.19	57.35	42.03	44.52	78	20	58	5	1	4	-	20	-	1	-	S.E.	22	7	1	1	"
Augusta Arsl.	40.22	53.67	47.03	46.97	68	15	53	2	5	1	3	8	2	5	5	S.E.	19	5	7	-	"
Canton. Jesup	45.96	58.32	51.09	51.79	74	24	50	5	4	4	-	7	2	9	-	S.W.	17	10	4	-	"
Canton. Clinch	49.97	57.61	56.70	54.76	74	26	48	3	6	12	-	2	7	1	-	N.E.	21	3	7	-	"
Petite Coquille	51.93	60.90	54.06	55.63	72	23	49	2	7	3	6	2	3	6	2	N.W.	19	9	3	-	"

No. II. FEBRUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Barracks	9.92	20.71	14.82	15.15	40	-7	47	3	12	8	-	3	-	2	-	N.W.	16	-	-	12	Fair.
Fort Snelling	8.07	11.95	2.50	7.51	33	-30	63	2	5	-	-	-	3	3	15	W.	22	2	-	4	"
Fort Howard	-3.17	16.74	7.07	6.88	41	-32	73	6	2	4	1	1	4	6	4	S.W.	12	16	-	-	Cl'dy.
Fort Preble	12.07	29.21	20.64	20.64	34	-2	36	-	3	3	4	2	4	5	7	W.	17	8	1	2	Fair.
Fort Niagara	19.10	25.89	19.96	21.65	52	0	52	1	4	3	-	-	4	8	8	S.W.	15	11	-	2	"
Fort Constitution	16.89	29.07	22.42	22.79	40	5	35	-	13	4	1	-	1	3	6	N.W.	19	9	-	-	"
Fort Wolcott	20.03	30.82	24.07	24.97	42	9	31	1	8	1	4	-	-	3	11	W.	17	2	3	6	"
Fort Armstrong	7.67	18.17	11.38	12.41	50	-16	66	8	2	2	1	-	7	-	8	N.	24	2	-	2	"
West Point	17.10	29.39	22.00	22.83	40	2	38	4	16	1	-	7	-	-	-	N.W.	18	2	2	6	"
Fort Columbus	21.57	30.07	24.67	25.44	41	11	30	-	13	4	1	-	1	3	6	N.W.	19	9	-	-	"
Washington city	22.07	35.42	28.38	28.62	46	8	38	1	16	3	1	2	1	4	-	N.W.	12	10	3	3	Cl'dy.
Jefferson Barracks	14.28	27.03	20.25	20.52	70	1	69	1	9	5	2	8	-	1	2	N.W.	19	3	3	3	Fair.
Fortress Monroe	32.21	39.86	36.14	36.07	54	22	32	7	6	8	-	-	1	3	3	N.E.	11	8	6	3	Cl'dy.
Fort Gibson	22.85	37.51	25.58	28.65	66	0	66	3	3	7	1	11	1	2	-	S.E.	19	8	1	-	Fair.
Augusta Arsl.	37.00	49.89	43.92	40.27	64	25	39	-	15	8	2	2	-	-	1	N.W	10	8	10	-	Cl'dy.
Canton. Jesup	36.85	53.85	45.10	45.27	72	18	54	6	10	4	-	-	2	6	-	N.W.	16	11	1	-	Fair.
Canton. Clinch	47.42	55.82	53.57	52.27	70	30	40	13	4	1	-	-	10	-	-	N.	11	7	9	1	Cl'dy.
Petite Coquille	48.25	56.10	49.17	51.17	70	28	42	4	2	4	6	3	-	4	5	E.	15	11	2	-	Fair.

No. III.

MARCH.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Barracks	18.87	32.02	25.06	25.32	52	-1	53	2	4	8	3	10	-	4	-	S.E.	23	-	1	7	Fair.
Fort Snelling	21.93	39.51	28.16	29.87	66	0	66	1	-	-	2	2	8	5	13	W.	20	5	3	3	"
Fort Howard	18.80	35.67	26.83	27.10	61	2	59	2	2	5	2	7	5	8	-	S.W.	15	16	-	-	Cl'dy.
Fort Preble	26.71	37.42	28.38	30.84	56	6	50	1	11	3	2	-	7	3	4	N.W.	16	13	1	1	Fair.
Fort Niagara	29.09	36.05	32.03	32.72	50	19	31	3	12	4	3	1	3	2	3	N.W.	14	14	-	3	Cl'dy.
Fort Constitution	26.45	37.80	29.61	31.29	60	12	48	2	12	4	-	-	4	4	5	N.W.	15	13	1	2	"
Fort Wolcott	27.74	39.51	31.38	32.88	52	18	34	2	10	3	-	-	1	4	11	W.	20	4	4	3	Fair.
Fort Armstrong	28.12	39.90	29.67	32.56	66	9	55	4	1	3	2	2	11	2	6	S.	20	4	2	5	"
West Point	28.77	42.16	33.48	34.80	68	17	51	3	19	-	1	5	1	1	1	N.W.	16	8	2	5	"
Fort Columbus	31.41	48.45	33.77	37.88	78	24	54	-	21	6	-	1	-	3	-	N.W.	24	1	3	3	"
Washington city	32.45	47.22	39.22	39.63	68	20	48	1	15	3	-	6	4	2	-	N.W.	12	12	5	2	Cl'dy.
Jefferson Barracks	35.87	50.77	41.16	42.60	70	55	15	-	4	3	1	14	-	9	-	S.E.	20	4	5	2	Fair.
Fortress Monroe	38.70	47.67	44.61	43.66	64	24	40	1	4	9	-	-	1	13	3	S.W.	14	10	5	2	Cl'dy.
Fort Gibson	39.38	55.93	50.64	48.32	76	24	52	-	1	11	1	18	-	-	-	S.E.	17	9	4	1	Fair.
Augusta Arsl.	40.80	57.83	51.12	49.92	77	29	46	2	8	3	-	5	1	6	6	N.W.	19	3	9	-	"
Canton. Jesup	45.68	61.09	52.48	53.08	78	30	48	1	7	1	1	6	2	9	4	S.W.	17	8	6	-	"
Canton. Clinch	50.64	60.61	56.96	56.07	70	36	34	8	-	-	14	1	6	-	2	E.	16	11	4	-	"
Petite Coquille	54.80	66.03	54.93	58.55	78	42	36	1	8	5	5	3	1	6	2	N.W.	21	8	2	-	"

No. IV. APRIL.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Barracks	33.60	48.73	41.60	41.31	67	22	45	1	7	5	4	8	2	3	-	S.E.	20	-	10	-	Fair.
Fort Snelling	43.46	56.13	44.50	48.03	84	20	54	1	7	1	1	1	8	3	8	S.	24	2	4	-	„
Fort Howard	34.33	48.13	38.03	40.16	76	26	50	8	5	4	1	2	5	5	-	N.	7	23	-	-	Cl'dy.
Fort Preble	39.86	52.06	40.26	44.06	66	32	34	2	5	4	2	3	8	3	3	S.	16	8	6	-	Fair.
Fort Niagara	40.23	53.10	43.06	45.46	79	32	47	5	2	5	-	3	4	4	7	W.	16	8	5	1	„
Fort Constitution	40.76	49.63	41.20	43.86	58	34	24	1	3	6	6	-	8	3	3	S.	18	9	3	-	„
Fort Wolcott	39.23	52.83	41.96	44.67	63	34	29	-	9	4	2	5	-	8	2	N.W.	15	9	6	-	Equal.
Fort Armstrong	45.86	56.86	46.46	49.73	84	34	50	10	2	2	3	-	10	-	3	N.	23	2	5	-	Fair.
West Point	43.00	58.10	48.06	49.72	86	34	52	3	9	-	1	5	2	4	6	N.W.	18	6	5	1	„
Fort Columbus	46.30	64.10	46.40	52.27	82	36	46	-	17	3	-	3	-	5	2	N.W.	22	2	6	-	„
Washington city	45.46	63.83	53.80	54.36	82	36	46	-	16	1	-	2	7	4	-	N.W.	13	11	6	-	„
Jefferson Barracks	52.56	68.30	59.66	60.17	80	48	32	1	2	1	3	11	2	10	-	S.E.	21	9	-	-	„
Fortress Monroe	51.73	61.00	57.83	56.85	81	40	41	-	-	4	1	6	2	13	4	S.W.	19	7	4	-	„
Fort Gibson	51.06	69.33	58.13	59.51	92	36	56	3	9	-	2	5	5	5	1	N.W.	18	9	3	-	„
Augusta Arsl.	49.90	68.63	59.66	59.40	83	33	50	3	6	1	-	1	-	13	6	S.W.	23	3	4	-	„
Canton. Jesup	53.70	72.30	61.03	62.34	87	40	47	3	9	-	2	5	5	5	1	N.W.	18	9	3	-	„
Canton. Clinch	60.16	69.30	65.90	65.12	78	46	32	6	-	-	-	-	19	-	5	S.	18	10	2	-	„
Petite Coquille	62.00	71.60	63.73	65.78	80	50	30	4	12	4	1	3	1	3	2	N.W.	18	9	3	-	„

No. V. MAY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'y.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Bar'ks	46.51	64.77	58.03	56.44	91	33	58	1	3	4	6	9	1	6	1	S.E.	20	7	4	-	Fair.
Fort Snelling	54.93	75.51	64.06	68.17	86	50	36	3	4	-	3	-	10	3	8	S.	21	1	9	-	"
Fort Howard	54.54	71.61	57.48	61.21	97	33	64	-	-	5	4	3	15	3	1	S.	17	14	-	-	"
Fort Preble	52.70	65.61	52.12	56.81	92	40	52	1	1	2	1	4	14	5	3	S.	16	8	7	-	"
Fort Niagara	56.32	66.61	55.42	59.45	94	41	53	4	3	6	1	4	6	1	6	S.W.	25	2	4	-	"
Fort Constitu'on	53.77	62.38	52.19	56.11	90	41	49	-	4	3	6	3	8	4	3	S.	16	13	2	-	"
Fort Wolcott	50.80	64.32	52.38	55.83	82	40	42	1	3	4	-	6	1	15	1	S.W.	15	10	6	-	Cl'dy.
Fort Armstrong	63.25	74.71	63.29	67.08	96	38	58	6	1	1	2	2	18	-	1	S.	26	5	-	-	Fair.
West Point	57.19	74.25	61.48	64.31	90	46	44	3	2	-	-	8	1	15	2	S.W.	20	7	4	-	"
Fort Columbus	59.34	73.12	59.09	63.85	91	40	51	1	12	5	1	7	-	5	-	N.W.	20	3	8	-	"
Washington city	59.22	75.00	63.38	65.53	87	47	40	-	6	1	-	8	14	2	-	S.	18	7	6	-	"
Jefferson Bar'ks	67.74	79.25	74.19	73.73	90	42	48	3	8	3	2	2	6	4	3	N.W.	26	5	-	-	"
Fortress Monroe	62.38	70.58	66.80	66.59	81	48	33	1	-	11	3	6	3	5	2	N.E.	16	8	7	-	"
Fort Gibson	71.48	84.64	74.19	76.77	96	50	46	1	-	2	-	28	-	-	-	S.E.	15	7	9	-	Cl'dy.
Augusta Arsl.	61.16	78.77	67.61	69.18	88	47	41	1	1	6	-	9	1	10	3	S.W.	11	3	17	-	"
Canton. Jesup	69.58	81.48	71.96	74.31	94	58	36	1	3	6	5	6	3	4	3	S.E.	11	11	9	-	"
Canton. Clinch	71.32	76.96	73.51	73.93	86	60	26	2	-	-	-	-	25	-	4	S.	6	21	4	-	"
Petite Coquille	74.19	81.19	71.19	75.52	90	64	26	-	6	12	-	6	-	6	1	N.E.	5	12	14	-	"

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No. VI. JUNE.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Bar'ks	51.30	70.53	63.26	61.70	92	35	57	-	2	7	4	9	2	5	1	S.E.	19	3	8	-	Fair.
Fort Snelling	71.73	80.03	69.13	73.63	90	60	30	2	3	1	2	2	5	4	11	W.	24	2	4	-	"
Fort Howard	62.96	79.00	64.33	68.76	92	50	42	4	3	1	3	2	6	8	3	S.W.	18	12	-	-	"
Fort Preble	60.86	74.13	58.60	64.53	84	46	38	3	7	1	1	8	9	-	1	S.	15	10	5	-	"
Fort Niagara	67.76	74.26	65.80	69.27	88	55	33	3	8	2	4	2	1	4	6	N.W.	23	3	4	-	"
F't Constitution	60.63	67.36	59.93	62.64	78	48	30	-	9	2	5	1	11	1	1	S.	19	10	1	-	"
Fort Wolcott	57.90	71.86	59.93	63.23	81	50	31	-	7	4	-	5	1	11	2	S.W.	11	13	6	-	Cl'dy.
Fort Armstrong	70.90	82.53	68.93	74.12	96	56	40	8	-	2	2	1	15	-	2	S.	25	3	2	-	Fair.
West Point	64.20	77.73	67.06	69.66	84	60	24	1	6	1	-	5	7	4	6	S.	21	6	3	-	"
Fort Columbus	67.53	79.90	66.00	71.14	89	58	31	-	10	5	-	3	-	12	-	S.W.	23	1	6	-	"
Washington city	68.30	79.70	72.83	73.61	92	60	32	-	12	-	2	9	2	5	-	N.W.	12	12	6	-	Cl'dy.
Jefferson Bar'ks	69.63	85.33	76.66	77.21	95	58	37	-	13	-	1	2	12	1	1	N.W.	22	8	-	-	Fair.
Fortress Monroe	70.96	77.93	74.30	74.40	84	66	18	1	3	11	-	1	2	7	5	N.E.	14	13	3	-	Cl'dy.
Fort Gibson	66.66	84.20	71.63	74.16	102	60	42	-	-	3	1	26	-	-	-	S.E.	22	4	4	-	Fair.
Augusta Arsl.	72.80	85.36	76.93	78.36	92	61	31	-	1	11	-	6	-	6	6	N.E.	13	6	11	-	Cl'dy.
Canton. Jesup	75.50	87.90	78.26	80.55	94	62	32	1	7	1	5	6	3	7	-	S.W.	18	9	3	-	Fair.
Canton. Clinch	79.10	86.96	82.86	82.94	93	74	19	4	-	-	-	-	18	1	7	S.	2	16	12	-	Cl'dy.
Petite Coquille	80.33	86.70	81.13	82.72	93	72	21	3	8	9	-	2	3	4	1	N.E.	5	16	9	-	"

No. VII. JULY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Bar'ks	54.41	71.71	64.12	60.08	84	42	42	-	8	1	9	11	-	1	1	S.E.	18	7	6	-	Fair.
Fort Snelling	71.19	80.09	69.26	73.51	88	62	26	4	4	1	4	3	2	1	12	W.	24	3	4	-	"
Fort Howard	63.90	77.64	64.00	65.51	87	52	35	3	3	10	-	1	3	10	1	S.W.	24	7	-	-	"
Fort Preble	62.90	79.48	61.80	68.06	92	54	38	-	1	1	1	4	14	6	4	S.	22	5	4	-	"
Fort Niagara	68.64	76.09	67.54	70.76	88	57	31	-	3	3	3	4	9	2	7	S.	25	2	4	-	"
Fort Constitution	64.35	69.83	62.77	65.65	87	53	34	-	4	1	3	3	10	5	5	S.	20	10	1	-	"
Fort Wolcott	61.61	74.03	63.93	66.52	79	54	25	2	2	4	1	3	3	15	1	S.W.	14	12	5	-	Cl'dy.
Fort Armstrong	71.87	83.38	70.06	75.10	96	50	46	12	1	2	-	3	12	-	1	S.	25	5	1	-	Fair.
West Point	66.29	78.93	72.29	72.50	90	58	32	1	8	1	-	2	7	5	7	N.W.	17	9	5	-	"
Fort Columbus	69.96	82.06	69.16	73.73	95	62	33	2	9	5	2	6	-	7	-	N.W.	24	4	3	-	"
Washington city	69.90	80.70	73.80	74.80	92	58	34	-	7	2	3	3	5	11	-	S.W.	18	5	8	-	"
Jefferson Barracks	70.35	87.29	72.83	76.82	97	62	35	12	3	2	-	4	9	1	-	N.	23	8	-	-	"
Fortress Monroe	74.70	81.22	78.16	78.03	89	68	21	-	-	5	2	2	3	18	1	S.W.	22	5	4	-	"
Fort Gibson	73.71	91.51	77.06	80.76	104	66	38	-	-	6	-	25	-	-	-	S.E.	23	6	2	-	"
Augusta Arsl.	72.87	86.61	76.25	78.58	93	64	29	-	2	5	1	3	-	17	3	S.W.	14	5	12	-	Cl'dy.
Canton. Jesup	77.03	86.51	80.06	81.20	94	66	28	5	6	4	-	4	6	5	1	S.W.	18	8	5	-	Fair.
Canton. Clinch	80.25	86.77	84.03	83.68	94	70	24	9	-	-	2	-	12	-	8	S.	5	16	10	-	Cl'dy.
Petite Coquille	80.67	86.71	81.51	82.96	92	71	21	-	6	5	1	3	-	16	-	S.W.	3	25	3	-	"

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Bar'ks	56.38	72.29	58.71	62.46	92	48	44	-	6	6	4	5	2	8	-	S.W.	23	6	2	-	Fair.
Fort Snelling	66.67	78.32	69.02	71.34	83	54	29	1	1	-	-	4	8	7	10	S.	26	3	2	-	"
Fort Howard	61.61	76.90	63.83	67.45	85	51	34	5	2	5	1	-	8	9	1	S.W.	26	5	-	-	"
Fort Preble	61.61	76.32	61.41	66.45	84	54	30	2	3	-	1	3	16	3	3	S.	21	6	4	-	"
Fort Niagara	68.38	76.12	70.12	71.54	85	60	25	6	4	1	2	-	7	5	6	S.	28	1	2	-	"
Fort Constitu'n	62.38	69.61	63.00	65.00	80	52	28	-	6	2	1	2	13	4	3	S.	25	5	1	-	"
Fort Wolcott	62.90	74.80	65.00	67.57	80	54	26	1	4	3	-	3	1	18	1	S.W.	17	9	5	-	"
Fort Armstrong	71.80	82.93	69.90	74.88	92	58	34	8	-	1	1	-	21	-	-	S.	27	3	1	-	"
West Point	66.61	77.77	69.64	71.34	86	60	26	2	12	-	1	2	7	4	3	N.W.	21	6	4	-	"
Fort Columbus	71.19	82.19	71.61	75.00	91	61	30	1	6	6	2	9	1	6	-	S.E.	19	2	10	-	"
Washington city	67.35	80.77	73.61	73.91	92	60	32	-	10	4	1	4	5	7	-	N.W.	18	4	9	-	"
Jefferson Bar'ks	72.41	85.64	72.87	76.97	97	62	35	2	1	3	4	3	16	1	1	S.	29	2	-	-	"
Fortress Monroe	76.09	81.58	79.03	78.90	89	70	19	2	3	8	6	1	-	7	4	N.E.	12	10	9	-	Cl'dy.
Fort Gibson	74.74	96.09	77.93	82.92	106	60	46	1	1	5	-	24	-	-	-	S.E.	26	5	-	-	Fair.
Augusta Arsl.	72.54	86.03	76.32	78.30	92	64	28	1	9	4	-	7	1	7	2	N.W.	12	12	7	-	Cl'dy.
Canton. Jesup	73.22	85.25	79.58	79.35	92	68	24	8	3	5	-	5	2	5	3	N.	13	10	8	-	"
Canton. Clinch	79.96	86.74	82.71	83.14	92	75	17	5	1	-	-	-	21	-	4	S.	3	11	17	-	"
Petite Coquille	80.83	87.00	82.25	83.33	92	77	15	1	9	6	4	1	1	8	1	N.W.	15	10	6	-	"

No. IX. SEPTEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Barracks	44.40	57.03	46.40	49.29	80	30	50	2	12	3	4	6	-	3	-	N.W.	17	5	8	-	Fair.
Fort Snelling	52.90	64.30	56.10	57.77	76	39	37	2	3	1	2	9	4	-	9	E.	20	5	5	-	,,
Fort Howard	50.66	64.00	53.33	56.00	88	38	50	10	5	-	-	-	10	3	2	N.	18	12	-	-	,,
Fort Preble	49.80	64.06	51.40	55.09	80	36	44	1	8	-	-	1	12	3	5	S.	22	4	4	-	,,
Fort Niagara	57.73	65.26	59.36	60.78	89	42	47	1	3	1	1	-	6	2	16	W.	16	14	-	-	,,
F't Constitution	51.33	62.50	53.34	55.72	73	38	35	1	7	-	-	1	9	3	9	S.W.	25	3	2	-	,,
Fort Wolcott	53.13	65.83	56.20	58 39	82	40	42	1	6	1	-	1	-	12	2	S.W.	16	9	5	-	,,
Fort Armstrong	57.10	70.60	61.13	62.94	88	46	42	15	1	2	-	1	11	-	-	N.	21	5	4	-	,,
West Point	55.56	66.23	60.03	60.61	89	40	49	1	7	1	-	9	4	7	1	S.E.	18	10	2	-	,,
Fort Columbus	58.93	72.83	60.66	64.14	92	46	46	-	12	-	1	4	1	11	1	N.W.	21	5	4	-	,,
Washington city	57.13	71.93	63.80	64.29	86	46	40	-	12	2	1	3	3	9	-	N.W.	13	10	7	-	Cl'dy.
Jefferson Barracks	58.93	74.96	63.50	65.80	88	47	41	3	8	7	-	3	4	1	4	N.W.	20	9	1	-	Fair.
Fortress Monroe	67.90	74.03	71.06	71.00	86	58	28	5	6	3	2	3	-	9	2	S.W.	23	6	1	-	,,
Fort Gibson	67.86	85.46	71.92	75.08	100	53	47	4	-	12	1	12	-	1	-	N.E.	17	7	6	-	,,
Augusta Arsl.	63.50	81.70	71.43	72.21	92	54	38	-	8	8	-	2	-	12	-	S.W.	16	14	-	-	,,
Canton. Jesup	73.80	82.10	75.93	77.28	90	60	30	5	7	7	1	1	3	5	1	N.W.	15	14	1	-	Equal.
Canton. Clinch	77.03	87.16	81.63	81.94	92	66	26	7	1	-	-	6	15	1	-	S.	16	12	2	-	Fair.
Petite Coquille	76.36	87.73	80.43	81.51	94	66	28	4	3	17	3	2	-	1	-	N.E.	26	2	2	-	,,

No. X. OCTOBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Bar'ks	33.90	51.00	41.67	42.19	68	24	44	5	8	1	7	8	-	2	-	S.E.	20	3	7	1	Fair.
Fort Snelling	44.22	57.61	49.54	50.46	68	20	48	1	3	-	2	6	4	10	5	S.W.	18	9	4	-	"
Fort Howard	43.80	57.64	47.74	49.73	72	21	51	4	1	5	1	3	12	4	1	S.	16	15	-	-	"
Fort Preble	43.80	55.22	45.61	48.21	66	30	36	2	5	3	2	1	12	5	1	S.	22	6	3	-	"
Fort Niagara	51.61	60.22	54.70	55.51	76	38	38	1	5	8	1	-	8	3	5	N.E.	16	4	11	-	"
Fort Constitut'n	44.29	55.00	46.32	48.54	72	30	42	2	5	5	1	-	13	1	4	S.	20	10	1	-	"
Fort Wolcott	45.67	57.67	48.64	50.66	66	33	33	3	7	6	2	4	2	6	1	N.W.	15	8	6	2	Cl'dy.
Fort Armstrong	49.74	63.38	51.22	54.78	78	32	46	6	-	2	1	3	13	-	6	S.	21	5	5	-	S:
West Point	47.54	60.61	51.32	53.16	70	28	42	3	8	1	5	6	2	2	4	N.W.	18	11	2	-	Fair.
Fort Columbus	49.90	63.29	51.35	54.85	78	39	39	1	5	5	2	13	1	3	1	S.E.	23	3	5	-	"
Washington city	49.35	62.64	55.39	55.79	72	31	41	-	8	5	1	8	6	3	-	S.E.	13	12	6	-	Cl'dy.
Jefferson Bar'ks	50.70	64.03	55.87	56.87	85	41	44	2	10	6	2	6	2	1	2	N.W.	22	8	1	-	Fair.
Fortress Monroe	61.87	67.22	64.67	64.59	75	54	21	1	9	7	1	-	1	6	6	N.W.	15	8	8	-	Cl'dy.
Fort Gibson	55.61	72.83	59.58	62.67	90	37	53	5	6	2	7	11	-	-	-	S.E.	16	6	9	-	Fair.
Augusta Ars'l	55.16	68.48	61.67	61.77	82	47	35	2	5	16	-	4	-	2	2	N.E.	13	12	6	-	Cl'dy.
Cant. Jesup	63.74	74.29	67.74	68.56	86	46	40	10	6	7	1	2	2	3	-	N.	19	9	3	-	Fair.
Cant. Clinch	69.19	78.61	73.45	73.75	88	54	34	5	2	10	1	5	6	2	-	N.E.	15	12	4	-	Cl'dy.
Petite Coquille	69.38	74.70	72.77	72.28	88	54	34	1	3	17	-	3	-	7	-	N.E.	20	6	5	-	Fair.

No. XI. NOVEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Barracks	22.50	33.03	25.30	26.94	60	−2	62	4	11	-	6	6	-	3	-	N.W.	13	1	13	3	Cl'dy.
Fort Snelling	22.30	32.90	26.23	27.14	48	−7	55	-	4	-	2	1	3	4	16	W.	14	11	-	5	"
Fort Howard	22.73	31.13	25.66	26.51	49	−4	53	7	1	6	1	-	12	1	2	S.	11	19	-	-	"
Fort Preble	33.80	41.26	36.53	37.20	58	20	38	1	4	4	-	2	4	4	11	W.	12	6	11	1	"
Fort Niagara	36.42	42.16	38.10	38.89	55	21	34	2	2	2	-	1	5	3	15	W.	10	11	6	3	"
Fort Constitution	36.66	44.23	37.66	39.52	59	20	39	1	6	4	1	-	9	3	6	S.	12	11	7	-	"
Fort Wolcott	40.03	47.33	40.80	42.72	58	26	32	2	9	5	-	2	1	8	3	S.W.	16	9	6	-	Fair.
Fort Armstrong	23.96	37.40	28.03	29.80	56	0	56	16	-	-	2	-	8	1	4	N.	20	6	-	4	"
West Point	38.60	47.03	39.50	41.71	60	24	36	5	5	3	1	6	6	2	2	S.E.	11	12	5	2	Cl'dy.
Fort Columbus	40.36	50.06	41.20	43.87	70	26	44	3	8	8	1	3	-	4	3	N.W.	18	4	7	1	Fair.
Washington city	38.36	48.36	41.36	42.69	60	24	36	2	11	3	-	4	9	1	-	N.W.	14	9	7	-	Cl'dy.
Jefferson Barracks	32.10	41.80	37.43	37.11	58	11	47	3	12	-	-	8	4	1	2	N.W.	18	12	-	-	Fair.
Fortress Monroe	48.66	54.80	51.03	51.50	67	34	33	2	5	5	2	4	3	5	4	S.W.	20	9	1	-	"
Fort Gibson	39.33	65.90	45.20	50.14	86	17	69	5	6	4	3	9	1	-	2	S.E.	21	7	1	1	"
Augusta Arsl.	41.03	59.46	50.86	50.45	74	23	51	-	5	4	-	7	-	8	6	S.W.	23	1	6	-	"
Canton. Jesup	47.70	63.96	55.23	55.63	76	26	50	-	9	4	-	5	3	4	5	N.W.	19	8	3	-	"
Canton. Clinch	53.60	64.26	60.00	59.29	77	33	44	3	10	-	-	9	4	4	-	N.W.	20	6	4	-	"
Petite Coquille	53.23	67.36	61.93	60.84	80	34	46	4	8	2	3	9	2	1	1	S.E.	23	5	2	-	"

No. XII. DECEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Hancock Bar'ks	21.61	32 35	23.35	25.77	50	-2	52	3	11	6	3	8	-	-	-	N.W.	23	1	3	4	Fair.
Fort Snelling	19.87	31.70	23.67	25.08	46	-7	53	-	2	1	2	2	9	4	11	W.	21	6	2	2	"
Fort Howard	24.74	33.64	29.80	29.39	49	8	41	-	1	3	2	2	22	1	-	S.	12	19	-	-	Cl'dy.
Fort Preble	29.74	36.96	31.48	32.73	56	10	46	3	4	2	-	3	3	3	13	W.	20	3	7	1	Fair.
Fort Niagara	37.77	42.61	38.48	39.62	60	22	38	1	3	2	2	1	8	8	6	S.W.	10	11	7	3	"
F't Constitution	32.67	40.51	36.25	36.48	59	12	47	4	3	2	1	1	6	7	7	S.W.	19	10	2	-	"
Fort Wolcott	37.03	43.54	37.54	39.37	56	22	34	2	7	5	-	2	-	9	6	S.W.	16	9	6	-	"
Fort Armstrong	30.00	40.06	33.74	34.60	63	12	51	8	-	2	5	-	12	1	3	S.	22	5	4	-	"
West Point	35.58	46.29	38.58	40.15	70	20	50	1	10	4	1	9	1	3	2	N.W.	18	10	3	-	"
Fort Columbus	37.70	46.90	39.29	41.30	69	26	43	-	9	1	-	6	1	11	3	S.W.	19	8	4	-	"
Washington city	38.45	50.70	43.70	44.28	64	26	38	1	6	6	-	4	9	4	1	S.	11	13	6	1	Cl'dy.
Jefferson Bar'ks	37.00	47.54	42.70	42.31	67	19	48	1	4	6	-	10	6	4	-	S.E.	20	11	-	-	Fair.
Fortress Monroe	47.32	54.22	50.77	50.77	64	36	28	4	3	4	-	1	1	16	2	S.W.	17	8	6	-	"
Fort Gibson	40.35	64.12	46.41	50.29	91	30	61	-	5	7	-	19	-	-	-	S.E.	18	10	2	1	"
Augusta Arsl.	47.54	61.22	53.77	54.18	79	28	51	1	4	14	1	2	-	8	1	N.E.	14	7	10	-	Cl'dy.
Canton. Jesup	48.87	59.22	51.19	53.09	86	28	58	3	7	6	1	5	5	4	-	N.W.	13	14	4	-	"
Canton. Clinch	57.67	64.48	60.67	60 94	75	37	38	3	3	2	3	11	-	6	3	S.E.	8	17	6	-	Fair.
Petite Coquille	55.87	67.36	60.22	61.15	79	39	40	9	4	7	5	-	1	4	1	N.	14	13	4	-	Cl'dy.

No. XIII. MEAN OF THE OBSERVATIONS FOR 1829.

PLACES OF OBSERVATION.	Latitude.	Longitude.	THERMOMETER. Mean Temperature. A.M. VII.	P.M. II.	P.M. IX.	Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	WINDS. N. Days.	N.W. Days.	N.E. Days.	E. Days.	S.E. Days.	S. Days.	S.W. Days.	W. Days.	Prevailing.	WEATHER. Fair. Days.	Cl'dy. Days.	Rain. Days.	Snow Days.	Prevailing
Hancock Bar'ks	46.10	° ′	33.38	47.44	39.63	40.15	92	-24	116	1.92	8.17	4.83	4.17	7.42	0.58	3.08	0.25	N.W.	19.42	2.75	5.42	2.83	Fair.
Fort Snelling	44.53	93.08	41.51	52.43	43.18	45.71	90	-30	120	1.42	3.58	0.58	1.67	2.67	5.58	4.58	10.42	W.	21.50	4.67	3.08	1.25	,,
Fort Howard	44.40	87.00	37.38	51.42	41.37	43.39	97	-32	129	4.50	2.50	4.42	1 42	1.83	8.50	5.83	1.42	S.W.	15.75	14.67	' -	-	,,
Fort Preble	43.38	70.18	40.82	53.09	42.41	45.44	92	-6	98	1.83	4.92	2.25	1.33	2.58	8.83	3.83	4.83	S.	17.75	7.42	4.75	0.50	,,
Fort Niagara	43.15	79.05	46.52	54.15	47.60	49.42	94	0	94	2.42	4.67	3.50	1.50	1.42	5.92	3.83	7.17	W.	17.75	7.58	3.67	1.42	,,
F't Constitution	43.04	70.49	42.58	51.40	44.00	45.99	90	-6	96	1.42	6.75	3.08	2.08	0.92	7.83	3.42	4.92	S.	18.42	9.67	2.00	0.33	,,
Fort Wolcott	41.30	71.18	43.46	54.68	45.79	47.98	82	6	76	1.50	6.58	3.58	1.00	2.67	0.92	9.75	3.83	S.W.	15.50	8.67	5.25	1.08	,,
Fort Armstrong	41.28	90.33	45.10	56.93	46.41	49.48	96	-16	112	9.50	0.75	1.58	1.92	1.33	12.00	0.33	3.00	S.	23.00	4 58	2.00	1.00	,,
West Point	41.22	73.57	45.33	57.59	49.05	50.66	90	0	90	2.42	9.75	1.25	0.92	5.67	3.17	4 33	2.92	N.W.	17.59	7.58	4.50	1.67	,,
Fort Columbus	40.42	74.02	48.27	60.21	49.15	52.54	95	7	88	0.67	11.17	4.92	0.83	4.92	0.42	6.17	1.33	N.W.	21.08	3.58	5.08	0.67	,,
Washington city	38.41	76.55	47.97	61.25	53.43	54.22	92	8	86	0.50	10.83	3.08	0.75	5.00	5.67	4.50	0.08	N.W.	14.00	9.58	6.00	0.83	Cl'dy.
Jefferson Bar'ks	38.28	90.08	49.35	62.92	54.36	55.54	97	1	96	3.08	6.83	3.58	1.25	6 08	5.25	3.08	1.25	N.W.	21.83	6.92	1.08	0.58	Fair.
Fortress Monroe	37.02	76.12	55.81	62.97	59.68	59.49	89	21	68	2.92	3 75	6.75	1.50	2.25	1.42	8.67	3.17	S.W.	16.58	8.42	5.00	0.42	,,
Fort Gibson	35.30	95.10	52.57	70.41	57.68	60.22	104	0	104	2.67	3.08	4.83	1.58	13.50	1.17	2.58	1.00	S.E.	18.92	6.67	4.50	0.18	,,
Augusta Arsl.	33.28	81.53	54.54	69.72	61.38	61.88	93	15	78	1.00	5.75	6.75	0.83	4.67	0.42	8-00	3.42	S.W.	15.58	6.58	8.33	0.00	,,
Canton. Jesup	31.30	93.47	59.22	72.19	64.14	65.55	94	18	76	4.00	6.50	4.08	1.33	4.33	3.17	5.50	1.50	N.W.	16.17	10.08	4.17	-	,,
Canton. Clinch	30.24	87.14	64.69	72.94	69.34	68.99	94	26	68	5.67	2.25	2.08	1.67	2.83	11.92	1.25	2.75	S.	11.75	11.83	6.75	-	Cl'dy.
Petite Coquille	30.10	89.38	65.65	74.45	67.75	69.28	94	23	71	2.75	6.33	7.67	2.83	3.08	1.00	5.50	1.33	N.E.	15.33	10.50	4:67	-	Fair.

No. I. JANUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	7.09	19.00	13.48	13.19	43	-26	69	2	6	2	5	3	2	8	3	S.W.	6	16	-	9	Cl'dy.
Hancock Barracks	3.09	11.67	6.09	6.95	34	-23	57	5	14	8	1	3	-	-	-	N.W.	10	4	-	12	"
Fort Snelling	9.87	19.48	13.19	14.18	33	-18	51	2	2	-	1	2	2	8	14	W.	25	2	-	4	Fair.
Fort Howard	8.38	21.80	11.93	14.04	44	-26	70	5	6	-	-	-	17	2	1	S.	15	7	-	9	Cl'dy.
Port Preble	16.51	23.93	19.35	19.93	44	-16	60	6	4	2	2	-	-	3	14	W.	14	10	1	6	"
Fort Niagara	22.25	30.09	25.48	25.94	53	0	53	-	3	-	-	4	3	9	12	W.	6	14	6	5	"
Fort Constitution	20.29	26.80	21.67	22.92	44	-10	54	5	9	1	-	-	3	5	8	N.W.	15	10	3	3	"
Fort Wolcott	25.97	33.74	28.71	29.47	50	0	50	1	16	3	1	-	-	8	2	N.W.	15	10	4	2	"
Fort Armstrong	16.77	30.51	23.06	23.45	48	-24	72	13	1	2	3	2	6	-	4	N.	25	5	-	1	Fair.
West Point	23.83	33.51	26.80	28.05	49	0	49	15	3	1	7	2	-	-	3	N.	24	4	2	1	"
Fort Columbus	27.51	36.80	30.90	31.74	49	5	44	-	14	7	-	2	-	7	1	N.W.	20	9	2	-	"
Washington city	29.03	39.74	32.74	33.84	54	10	44	-	13	3	-	6	6	3	-	N.W.	14	13	3	1	Cl'dy.
Jefferson Barracks	27.42	38.16	32.80	32.79	56	8	48	6	6	3	-	5	7	4	-	S.	15	14	1	1	"
Fortress Monroe	39.16	46.29	43.06	42.84	58	22	36	10	8	7	-	-	-	4	2	N.	16	10	4	1	Fair.
Fort Gibson	35.29	64.54	43.09	47.64	83	14	69	4	-	12	3	12	-	-	-	N.E.	20	7	3	1	"
Augusta Arsl.	40.64	56.58	48.61	48.61	60	25	35	-	9	5	-	2	-	12	3	S.W.	27	2	2	-	"
Canton. Jesup	43.22	59.06	49.03	50.44	72	26	46	2	10	4	-	-	4	8	3	N.W.	19	10	2	-	"
Petite Coquille	51.90	63.19	57.45	57.51	75	38	37	9	4	4	2	1	2	-	9	N.	27	2	2	-	"
St. Augustine	52.11	64.40	56.21	57.57	72	34	38	10	5	-	1	1	6	4	4	N.	17	12	2	-	"
Canton. Brooke	56.48	67.77	59.00	61.08	74	40	34	12	7	-	-	1	5	3	3	N.	16	15	-	-	"

No. II. FEBRUARY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	13.92	25.03	17.07	18.67	41	-15	56	1	5	1	4	5	2	5	5	N.W.	4	17	-	7	Cl'dy.
Hancock Barracks	8.21	19.75	12.67	13.54	44	-15	59	2	10	5	6	2	-	3	-	N.W.	20	2	-	6	Fair.
Fort Snelling	15.00	32.85	22.96	23.60	51	-19	70	-	2	1	1	1	2	6	15	W.	21	4	-	3	"
Fort Howard	17.28	33.85	22.28	24.47	48	-2	50	5	1	1	3	-	14	2	2	S.	12	12	1	3	Cl'dy.
Fort Preble	14.71	27.42	20.28	20.80	50	-12	62	4	1	4	-	-	7	-	12	W.	14	10	-	4	Equal.
Fort Niagara	25.21	32.75	28.32	28.76	52	6	46	-	7	2	3	1	5	5	5	N.W.	14	12	2	-	"
Fort Constitution	18.50	28.46	22.87	23.28	54	-5	59	4	12	-	-	-	1	4	7	N.W.	17	9	-	2	Fair.
Fort Wolcott	22.78	33.82	25.96	27.52	48	0	48	-	16	3	-	-	-	6	3	N.W.	13	10	2	3	Cl'dy.
Fort Armstrong	22.85	38.39	29.64	30.29	60	-10	70	4	3	1	1	-	15	1	3	S.	26	2	-	-	Fair.
West Point	19.96	35.53	25.53	27.01	65	-6	71	10	8	1	-	3	1	3	2	N.	20	7	-	1	"
Fort Columbus	26.50	39.64	29.64	31.93	55	8	47	-	16	2	-	1	-	9	-	N.W.	19	8	-	1	"
Washington city	27.46	40.21	33.42	33.70	62	4	58	2	10	4	-	2	8	2	-	N.W.	13	12	2	1	Cl'dy.
Jefferson Barracks	30.85	44.29	37.50	37.55	71	8	63	6	5	-	1	4	8	3	1	S.	18	10	-	-	Fair.
Fortress Monroe	37.00	44.57	40.28	40.62	59	24	35	3	4	5	3	2	2	6	3	S.W.	16	10	1	1	"
Fort Gibson	36.50	59.17	46.78	47.48	78	18	60	4	1	3	-	19	1	-	-	S.E.	16	8	3	1	"
Augusta Ars'l	43.00	57.46	50.71	50.39	72	24	48	2	7	9	-	-	1	9	-	N.E.	13	7	6	2	Cl'dy.
Cant. Jesup	45.82	57.00	48.92	50.58	76	26	50	5	6	5	-	4	3	2	3	N.W.	14	10	3	1	Equal.
Petite Coquille	54.00	65.03	59.64	59.56	78	36	42	7	3	6	4	3	1	1	3	N.	15	11	2	-	Fair.
St. Augustine	58.25	68.80	60.46	62.50	78	51	27	2	-	9	1	8	2	6	-	N.E.	17	6	5	-	"
Canton. Brooke	58.46	71.85	60.35	63.55	82	48	34	1	7	14	-	2	1	3	-	N.E.	24	-	4	-	"

No. III. MARCH.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	22.80	35.67	25.29	27.92	51	–5	56	3	8	1	5	7	2	2	3	N.W.	9	17	1	4	Cl'dy.
Hancock Barracks	20.51	35.09	26.77	27.46	56	0	56	-	13	10	-	5	1	2	-	N.W.	17	2	5	7	Fair.
Fort Snelling	27.87	41.67	32.45	34.00	54	2	52	2	1	1	1	1	5	7	13	W.	17	10	-	4	„
Fort Howard	26.32	43.12	30.19	33.21	70	10	60	10	-	4	3	-	12	1	1	S.	10	10	3	8	Cl'dy.
Fort Preble	29.16	40.00	32.96	34.04	60	14	46	-	3	5	1	6	2	5	9	W.	14	9	5	3	„
Fort Niagara	32.06	40.74	35.38	36.06	65	12	53	2	7	5	1	3	2	2	9	W.	16	9	-	6	Fair.
Fort Constitution	31.16	41.12	34.06	35.45	64	16	48	1	5	7	2	-	9	2	5	S.	17	10	2	2	„
Fort Wolcott	32.71	44.09	35.90	37.90	59	22	37	3	10	1	1	5	1	7	3	N.W.	13	15	2	1	Cl'dy.
Fort Armstrong	36.19	49.00	38.35	41.18	68	20	48	4	-	2	2	-	21	-	2	S.	21	4	5	1	Fair.
West Point	33.96	47.45	38.80	40.07	66	18	48	4	6	6	1	9	2	1	2	S.E.	18	8	3	2	„
Fort Columbus	35.38	49.42	38.35	41.05	70	21	49	-	12	7	1	4	-	5	2	N.W.	19	8	3	1	„
Washington city	39.87	53.12	46.09	46.36	72	22	50	1	13	2	-	3	8	4	-	N.W.	10	13	8	-	Cl'dy.
Jefferson Barracks	42.96	53.86	47.19	48.00	74	27	47	4	7	1	-	7	6	3	3	S.E.	15	15	1	-	„
Fortress Monroe	46.51	55.54	50.80	50.95	72	27	45	1	3	7	1	3	-	12	4	S.W.	12	16	3	-	„
Fort Gibson	50.38	68.09	53.90	57.46	87	32	55	3	1	8	2	17	-	-	-	S.E.	17	7	7	-	Fair.
Augusta Arsl.	48.45	67.87	58.58	58.30	84	30	54	-	3	7	-	6	1	14	-	S.W.	25	2	4	-	„
Canton. Jesup	57.48	68.16	60.38	62.01	78	34	44	2	5	8	1	6	3	3	3	N.E.	17	10	4	-	„
Petite Coquille	63.32	72.90	68.29	68.17	85	45	40	5	4	2	6	2	5	5	2	E.	20	7	4	-	„
St. Augustine	61.12	71.48	62.12	65.24	79	50	29	1	6	7	-	11	1	5	-	S.E.	22	5	4	-	„
Canton. Brooke	62.96	76.51	63.12	67.53	86	46	40	1	8	8	-	5	1	7	1	N.	29	-	2	-	„

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	42.36	54.73	41.46	46.18	75	25	50	1	3	1	4	13	4	4	-	S.E.	9	15	5	1	Cl'dy.
Hancock Barracks	34.63	58.60	45.90	46.38	80	25	55	-	9	9	3	8	1	-	-	N.E.	25	3	2	-	Fair.
Fort Snelling	46.02	59.00	49.30	51.77	66	33	33	-	3	1	2	6	10	4	4	S.	12	7	11	-	Cl'dy.
Fort Howard	44.86	60.93	48.86	51.55	87	30	47	12	-	4	-	1	13	-	-	S.	12	18	-	-	„
Fort Preble	43.33	56.53	44.03	47.96	79	32	47	2	-	4	4	2	5	7	6	S.W.	15	9	6	-	Equal.
Fort Niagara	45.00	57.03	46.73	49.59	80	35	45	1	4	8	2	3	5	2	5	N.E.	24	4	2	-	Fair.
Fort Constitution	43.56	52.36	44.60	46.84	75	33	42	2	2	12	2	1	9	-	2	N.E.	18	11	1	-	„
Fort Wolcott	41.06	54.86	43.66	46.53	74	34	40	1	5	14	1	2	1	5	1	N.E.	13	11	6	-	Cl'dy.
Fort Armstrong	50.33	63.03	54.33	55.90	77	33	44	9	-	2	1	5	7	2	4	N.	15	11	4	-	Equal.
West Point	46.73	63.73	52.10	54.19	80	32	48	8	5	6	1	5	1	3	1	N.	18	7	5	-	Fair.
Fort Columbus	48.76	59.36	50.53	52.88	81	40	41	1	5	10	1	1	-	11	1	S.W.	18	8	4	-	„
Washington city	47.83	65.10	56.03	56.32	83	38	45	2	6	3	4	4	8	3	-	S.	20	7	3	-	„
Jefferson Barracks	56.46	67.90	60.23	61.53	82	38	44	-	7	-	-	9	13	1	-	S.	18	12	-	-	„
Fortress Monroe	52.93	61.83	57.36	57.37	82	43	39	6	3	6	-	3	3	9	-	S.W.	17	11	2	-	„
Fort Gibson	58.13	73.86	63.80	65.26	86	37	49	-	1	4	1	24	-	-	-	S.E.	16	8	6	-	„
Augusta Arsl.	54.53	82,12	70.93	69.19	85	41	44	-	2	6	-	12	1	9	-	S.E.	23	2	5	-	„
Canton. Jesup	58.00	72.03	63.23	64.42	82	34	48	4	1	5	2	4	1	8	5	S.W.	17	10	3	-	„
Petite Coquille	66.26	76.80	71.73	71.60	84	50	34	2	4	5	4	14	-	-	1	S.E.	24	6	-	-	„
St. Augustine	67.13	73.23	68.23	69.53	77	57	20	-	-	10	1	15	2	1	1	S.E.	20	5	5	-	„
Canton. Brooke	66.80	78.36	68.66	71.27	84	56	28	2	3	5	3	7	7	3	-	S.E.	24	2	4	-	„

No. V. MAY.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	46.70	56.29	42.44	48.48	72	32	40	1	12	1	2	9	-	3	3	N.W.	7	16	7	1	Cl'dy.
Hancock Barracks	42.35	63.51	51.51	52.46	75	30	45	1	8	7	5	7	-	3	-	N.E.	22	2	7	-	Fair.
Fort Snelling	57.80	65.29	56.00	59.70	80	32	42	4	2	1	-	-	4	10	10	S.	20	5	5	1	"
Fort Howard	47.45	66.09	50.06	54.53	96	36	60	12	-	1	-	-	16	2	-	S.	19	12	-	-	"
Fort Preble	51.12	62.54	48.45	54.04	71	38	33	1	-	-	4	2	9	6	9	W.	14	6	11	-	Cl'dy.
Fort Niagara	58.12	63.22	58.93	60.09	76	44	32	1	3	13	-	1	4	3	6	N.E.	20	7	4	-	Fair.
Fort Constitution	51.49	58.00	49.96	53.15	72	42	30	-	4	4	2	-	15	5	1	S.	20	10	1	-	"
Fort Wolcott	49.29	63.64	52.22	55.05	72	40	32	1	7	3	1	6	1	10	2	S.W.	16	8	7	-	"
Fort Armstrong	58.25	69.80	59.09	62.38	82	39	43	3	-	4	5	4	8	4	3	S.	17	12	2	-	"
West Point	54.45	65.16	58.25	59.62	78	44	34	1	6	5	-	11	6	-	2	S.E.	23	6	2	-	"
Fort Columbus	56.96	67.32	56.74	60.34	84	47	37	-	3	5	1	5	3	12	2	S.W.	22	7	2	-	"
Washington city	59.41	72.06	64.00	65.16	80	52	28	-	9	2	1	4	10	5	-	S.	17	9	5	-	"
Jefferson Barracks	61.19	71.64	66.25	66.36	86	43	43	1	5	-	1	1	17	2	4	S.	22	6	3	-	"
Fortress Monroe	63.48	71.22	67.06	67.25	81	52	29	-	3	10	3	6	1	6	2	N.E.	16	7	8	-	"
Fort Gibson	42.12	79.45	68.29	69.95	90	40	50	-	1	-	2	28	-	-	-	S.E.	18	4	9	-	"
Augusta Arsl.	64.19	82.12	70.93	72.41	90	51	39	2	2	4	1	5	1	16	-	S.W.	8	15	8	-	Cl'dy.
Canton. Jesup	65.38	77.90	69.19	70.82	93	46	47	-	8	5	-	3	10	3	2	S.	17	11	3	-	Fair.
Petite Coquille	73.51	82.03	77.35	77.63	88	62	26	4	2	4	4	1	6	6	4	S.W.	29	2	-	-	"
St. Augustine	73.06	78.74	74.03	75.28	90	68	22	1	-	5	1	16	-	7	1	S.E.	15	6	10	-	Cl'dy.
Canton. Brooke	73.12	84.06	75.03	77.40	88	68	20	1	-	5	1	4	7	9	4	S.W.	25	1	5	-	Fair.

No. VI. JUNE.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	56.16	65.56	56.33	59.35	81	45	36	7	9	-	3	6	2	2	1	N.W.	12	13	5	-	Cl'dy.
Hancock Barracks	54.26	69.83	58.20	60.80	88	42	46	-	4	8	3	12	1	2	-	S.E.	11	5	14	-	"
Fort Snelling	70.56	75.23	65.13	70.31	82	48	34	4	1	1	1	1	4	5	13	W.	23	-	7	-	Fair.
Fort Howard	58.20	73.73	60.06	64.00	92	46	46	8	1	4	-	1	12	1	3	S.	18	12	-	-	"
Fort Preble	59.03	70.66	57.66	62.42	79	51	28	-	1	1	5	1	6	7	9	W.	23	-	7	-	"
Fort Niagara	63.53	72.10	69.93	68.52	84	62	22	7	-	4	1	1	4	6	7	N.W.	17	9	4	-	"
Fort Constitution	61.06	68.00	59.23	62.76	82	50	32	-	2	5	2	1	9	7	4	S.	19	7	4	-	"
Fort Wolcott	58.66	71.63	61.23	63.84	82	52	30	-	5	2	1	2	-	17	3	S.W.	16	5	9	-	"
Fort Armstrong	68.73	77.73	70.33	72.26	88	54	34	1	5	-	3	4	8	5	4	S.	20	10	-	-	"
West Point	64.26	75.66	67.46	69.13	84	58	26	3	7	-	1	9	-	6	4	S.E.	22	2	6	-	"
Fort Columbus	65.63	79.10	66.63	70.45	94	58	36	-	5	5	-	3	3	13	1	S.W.	23	4	3	-	"
Washington city	67.93	80.56	72.13	73.54	90	60	30	1	9	-	-	3	10	5	2	S.	18	5	7	-	"
Jefferson Barracks	71.83	82.60	72.60	75.68	93	54	39	1	5	-	-	-	20	1	3	S.	20	10	-	-	"
Fortress Monroe	71.13	80.96	75.83	75.97	96	61	35	-	-	2	6	1	3	9	9	S.W.	16	12	2	-	"
Fort Gibson	73.83	90.53	77.50	80.62	103	62	41	-	-	2	2	24	1	-	1	S.E.	25	2	3	-	"
Augusta Arsl.	74.16	88.06	82.13	81.45	95	56	39	-	4	5	-	5	1	11	4	S.W.	21	5	4	-	"
Canton. Jesup	72.63	87.50	77.76	79.30	97	54	43	-	4	6	1	2	-	11	6	S.W.	25	1	4	-	"
Petite Coquille	77.96	86.73	81.46	82.05	92	68	24	-	3	6	3	2	1	7	8	W.	25	3	2	-	"
St. Augustine	77.03	85.36	79.60	80.70	93	71	22	-	-	10	-	9	-	5	6	N.E.	15	5	10	-	Equal.
Canton. Brooke	78.50	86.70	79.33	81.51	90	60	30	-	1	-	9	8	-	11	1	N.W.	21	3	6	-	Fair.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	68.74	78.09	66.16	71.00	93	50	43	8	6	-	1	3	1	9	3	S.W.	16	12	3	-	Fair.
Hancock Barracks	60.77	77.48	66.12	68.12	95	47	48	0	4	6	1	7	7	6	-	S.E.	17	3	11	-	"
Fort Snelling	80.00	88.06	76.93	81.66	94	70	24	-	2	-	-	10	2	16	1	S.W.	26	2	3	-	"
Fort Howard	71.22	83.16	72.77	75.72	100	50	50	3	-	2	3	1	18	1	3	S.	21	6	4	-	"
Fort Preble	65.90	78.80	64.90	69.87	94	56	38	-	-	1	7	2	6	10	5	S.W.	16	8	7	-	"
Fort Niagara	75.74	83.12	76.45	78.44	98	62	36	6	-	2	4	-	6	6	7	W.	27	-	4	-	"
Fort Constitution	67.58	73.32	66.45	69.12	91	56	35	4	3	7	2	1	5	6	3	N.E.	19	9	3	-	"
Fort Wolcott	65.64	77.64	67.77	70.35	89	59	30	1	9	8	-	1	-	11	1	S.W.	16	7	8	-	"
Fort Armstrong	79.16	88.87	76.06	81.36	98	66	32	4	4	-	3	4	7	7	2	S.	31	-	-	-	"
West Point	72.84	78.29	75.93	75.69	92	60	32	4	4	1	3	9	3	2	5	S.E.	23	5	3	-	"
Fort Columbus	74.80	87.00	74.45	78.75	98	64	34	-	2	7	1	5	2	10	4	S W	25	4	2	-	"
Washington city	74.09	89.38	79.96	81.14	96	64	32	2	7	1	-	2	8	11	-	S.W.	23	5	3	-	"
Jefferson Barracks	75.54	86.93	76.87	79.78	98	66	32	5	3	-	2	5	14	1	1	S.	18	3	10	-	"
Fortress Monroe	77.29	86.16	80.94	81.46	94	72	22	-	1	8	-	7	-	13	2	S.W.	19	12	-	-	"
Fort Gibson	76.12	91.71	78.03	81.95	103	71	32	1	9	8	-	1	-	11	1	S.W.	16	7	8	-	"
Augusta Arsl.	77.83	90.16	85.22	84.40	102	74	28	-	1	-	-	13	2	11	4	S.E.	21	-	10	-	"
Canton. Jesup	77.32	90.00	80.48	82.93	96	72	24	3	5	7	2	-	2	5	7	N.W.	15	11	5	-	Cl'dy.
Petite Coquille	81.67	90.06	83.58	85.10	94	77	17	4	3	5	4	4	1	6	4	S.W.	26	4	1	-	Fair.
St. Augustine	79.61	86.25	81.35	82.40	94	78	16	-	-	3	-	19	-	2	7	S.E.	18	1	12	-	"
Canton. Brooke	80.45	87.09	79.67	82.40	92	76	16	-	2	4	3	12	2	5	3	S.E.	8	23	-	-	Cl'dy.

No. VIII.

AUGUST.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	60.12	67.61	59.25	62.33	80	51	29	10	4	2	3	6	-	4	2	N.	17	11	3	-	Fair.
Hancock Barracks	56.87	75.22	61.11	64.40	78	45	33	-	4	7	1	10	5	4	-	S.E.	22	1	8	-	"
Fort Snelling	69.90	79.61	70.12	73.21	90	61	29	-	13	1	-	4	-	13	-	S.W.	19	10	2	-	"
Fort Howard	62.90	77.29	66.12	68.77	88	50	38	6	1	-	4	9	6	-	5	S.E.	14	11	6	-	Cl'dy.
Port Preble	62.58	74.80	63.25	66.88	83	56	27	-	2	1	1	5	6	6	10	W.	14	11	6	-	"
Fort Niagara	70.64	79.16	73.93	74.58	89	63	26	4	2	5	5	1	5	4	5	E.	16	5	10	-	Fair.
Fort Constitution	64.77	70.83	63.48	66.36	78	56	22	1	8	2	1	2	11	5	1	S.	20	11	-	-	"
Fort Wolcott	63.38	75.64	65.70	68.24	81	58	23	1	6	4	1	5	1	12	1	S.W.	15	10	6	-	"
Fort Armstrong	71.77	85.74	72.22	76.58	92	59	33	6	1	4	2	2	4	8	4	S.W.	23	8	-	-	"
West Point	71.87	79.83	74.35	75.35	86	61	25	-	8	2	-	8	3	7	3	N.W.	21	9	1	-	"
Fort Columbus	73.09	85.54	72.48	77.04	94	65	29	-	2	10	-	1	3	13	2	S.W.	28	3	-	-	"
Washington city	70.06	86.77	77.03	77.95	98	60	38	4	10	2	1	3	-	10	1	S.W.	18	6	7	-	"
Jefferson Barracks	76.29	84.06	75.87	78.74	95	67	28	-	2	-	6	6	16	1	-	S.	25	-	6	-	"
Fortress Monroe	76.09	81.41	78.16	78.55	88	72	16	2	-	2	-	8	1	9	9	S.W.	19	7	5	-	"
Fort Gibson	75.93	99.09	79.61	84.88	107	64	43	2	-	4	2	20	3	-	-	S.E.	28	1	2	-	"
Augusta Arsl.	75.77	90.64	83.00	83.14	98	68	30	-	-	4	-	11	1	14	1	S.W.	21	6	4	-	"
Canton. Jesup	76.22	91.64	81.38	83.08	99	70	29	6	3	1	2	3	8	5	3	S.	23	4	4	-	"
Petite Coquille	80.51	90.38	83.61	84.83	98	74	24	3	6	8	5	1	2	2	4	N.E.	28	1	2	-	"
St. Augustine	79.45	85.16	81.70	82.10	93	79	14	2	-	9	-	17	-	1	2	S.E.	23	2	6	-	"
Canton. Brooke	77.87	87.54	79.60	81.67	92	74	18	-	5	7	4	4	-	6	5	N.E.	14	17	-	-	Cl'dy.

No. IX. SEPTEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.,	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	52.86	61.30	51.50	55.22	70	40	30	4	5	2	5	6	1	1	6	S.E.	12	10	8	-	Cl'dy.
Hancock Bar'ks	46.10	63.26	52.56	53.97	75	35	35	-	13	6	1	7	-	3	-	N.W.	23	1	6	-	Fair.
Fort Snelling	53.88	66.10	56.13	58.70	79	37	42	-	8	6	-	9	1	6	-	S.E.	15	9	6	-	Equal.
Fort Howard	51.00	65 43	54.73	57.05	82	32	50	4	6	1	1	4	10	-	4	S.	13	11	6	-	Cl'dy.
Fort Preble	53.10	65.73	54.80	57.88	76	40	36	-	2	1	3	3	8	6	7	S.	14	10	6	-	"
Fort Niagara	63.96	69.53	67.30	66.93	78	54	24	2	4	3	8	1	3	5	4	E.	17	1	12	-	Fair.
Fort Constitution	54.66	64.20	55.00	57.95	74	40	34	3	8	5	4	-	8	2	-	S.	18	10	2	-	"
Fort Wolcott	55.90	67.70	58.63	60.74	75	40	35	1	3	12	-	3	-	10	1	N.E.	16	9	5	-	"
Fort Armstrong	57.06	69.60	61.96	62.87	89	44	45	7	4	5	5	1	3	1	4	N.	15	14	1	-	"
West Point	64.03	70.46	65.70	66.73	81	53	28	6	8	1	3	11	-	-	1	S.E.	19	11	-	-	"
Fort Columbus	62.10	75.16	64.06	67.11	89	50	39	-	10	6	-	1	2	11	-	S.W.	26	4	-	-	"
Washington city	61.76	77.90	68.16	69.27	91	40	51	1	7	8	1	2	5	6	-	N.E.	17	8	5	-	"
Jefferson Barracks	63.50	75.03	64.36	67.63	96	51	45	5	1	4	4	4	4	8	-	S.W.	24	-	6	-	"
Fortress Monroe	71.80	75.33	72.56	73.23	88	62	26	8	1	6	1	3	2	7	2	N.	15	14	1	-	Equal.
Fort Gibson	70.40	92.66	74.06	79.04	103	60	43	3	-	13	2	10	2	-	-	N.E.	24	5	1	-	Fair.
Augusta Arsl.	66.30	82.13	73.13	73.85	94	43	51	-	6	3	-	12	4	4	1	S.E.	10	12	8	-	Cl'dy.
Canton. Jesup	70.86	85.20	75.76	77.27	96	55	41	6	4	10	-	-	5	5	-	N.E.	20	7	3	-	Fair.
Petite Coquille	76.13	87.93	80.63	81.56	94	60	34	3	2	17	2	1	-	5	-	N.E.	26	3	1	-	"
St. Augustine	76.46	80.76	77.60	78.27	87	69	18	-	-	13	-	16	-	1	-	S.E.	14	6	10	-	Cl'dy.
Canton. Brooke	75.40	85.06	77.30	79.25	90	66	24	-	1	18	3	4	-	2	2	N.E.	7	23	-	-	"

No. X. OCTOBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	47.67	54.61	46.22	49.50	74	35	39	2	4	3	8	9	-	1	4	S.E.	15	11	5	-	Cl'dy.
Hancock Barracks	40.25	57.22	45.00	47.49	76	25	51	3	11	3	1	6	2	4	1	N.W.	18	1	12	-	Fair.
Fort Snelling	49.06	62.19	52.96	54.74	82	36	46	2	7	1	-	1	4	10	6	S.W.	18	10	3	-	"
Fort Howard	46.36	62.12	53.74	54.07	78	30	48	1	4	2	2	8	12	-	2	S.	22	3	6	-	"
Fort Preble	44.61	57.19	49.09	50.30	70	32	38	1	3	4	1	3	8	2	9	W.	18	8	5	-	"
Fort Niagara	59.58	65.22	62.35	62.38	76	50	26	2	2	3	7	4	3	5	5	E.	18	3	10	-	"
Fort Constitution	46.38	57.64	50.12	51.38	69	34	35	-	4	4	4	1	9	5	4	S.	24	6	1	-	"
Fort Wolcott	49.46	60.25	53.54	54.42	68	35	33	2	2	6	2	2	1	12	4	S.W.	19	9	3	-	"
Fort Armstrong	53.38	60.03	57.58	57.00	88	45	43	2	-	3	6	2	7	2	9	W.	18	13	-	-	"
West Point	44.25	61.58	40.64	48.82	75	38	37	5	3	-	-	1	17	-	5	S.	19	6	6	-	"
Fort Columbus	54.09	65.48	56.45	58.67	76	48	28	-	13	7	1	5	-	5	-	N.W.	24	4	3	-	"
Washington city	51.12	66.87	58.00	58.66	76	38	38	-	7	9	2	1	6	3	3	N.E.	15	7	9	-	Cl'dy.
Jefferson Barracks	56.48	67.90	57.83	60.74	83	44	39	4	2	-	4	4	3	7	7	S.W.	23	3	5	-	Fair.
Fortress Monroe	63.90	66.74	64.70	65.11	72	60	12	4	2	10	3	-	-	10	2	N.E.	18	8	5	-	"
Fort Gibson	56.87	84.41	66.16	69.15	95	28	67	2	1	7	6	13	2	-	-	S.E.	22	8	1	-	"
Augusta Arsl.	53.41	68.66	61.30	61.12	80	45	35	-	14	5	-	5	-	5	2	N.W.	13	10	6	-	Cl'dy.
Canton. Jesup	64.64	78.32	67.35	70.10	86	38	48	5	7	6	1	4	5	2	1	N.W.	22	8	1	-	Fair.
Petite Coquille	66.35	79.70	72.93	72.99	84	51	33	5	2	15	3	3	-	2	1	N.E.	23	8	-	-	"
St. Augustine	69.35	75.35	71.00	71.90	82	66	16	-	-	27	2	1	-	1	-	N.E.	17	5	9	-	"
Cant. Brooke	68.54	81.03	73.29	74.29	88	60	28	-	8	13	1	-	2	3	4	N.E.	21	5	5	-	"

No. XI. NOVEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'dy.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	40.90	48.86	42.48	44.08	60	31	29	1	2	2	13	7	1	4	-	E.	3	13	14	-	Cl'dy.
Hancock Barracks	34.70	45.46	35.80	38.65	60	10	50	2	10	5	1	6	3	3	-	N.W.	17	2	7	4	Fair.
Fort Snelling	38.13	48.63	41.60	42.79	65	27	38	2	3	2	1	3	1	8	10	W.	6	18	5	1	Cl'dy.
Fort Howard	39.20	47.86	42.06	43.04	62	28	34	4	7	4	2	1	9	2	1	S.	16	2	11	1	Fair.
Fort Preble	42.66	47.63	43.26	44.52	59	30	29	6	5	6	4	-	1	4	4	N.E.	7	17	6	-	Cl'dy.
Fort Niagara	54.96	59.36	57.76	57.36	67	47	20	1	2	3	6	5	3	2	8	W.	8	8	14	-	"
Fort Constitution	44.36	49.33	44.43	46.04	59	33	26	2	3	17	1	1	2	1	3	N.E.	9	15	5	1	"
Fort Wolcott	36.70	53.33	48.03	46.02	65	33	32	3	6	14	-	1	2	3	1	N.E.	6	17	7	-	"
Fort Armstrong	46.70	54.60	48.66	49.99	74	34	40	1	4	2	8	2	5	2	6	E.	12	17	1	-	"
West Point	48.40	51.50	49.83	49.91	63	35	28	11	9	1	1	1	4	-	3	N.	9	13	8	-	"
Fort Columbus	48.50	54.73	50.00	51.08	67	38	29	2	4	14	2	2	1	3	2	N.E.	11	8	11	-	"
Washington city	48.70	57.36	51.36	52.47	71	36	35	4	9	10	1	-	1	2	3	N.E.	13	9	8	-	"
Jefferson Barracks	47.90	57.70	48.70	51.43	75	31	44	5	1	2	3	1	8	5	5	S.	13	8	9	-	"
Fortress Monroe	57.56	61.13	58.46	59.05	66	44	22	3	7	11	2	-	-	4	3	N.E.	10	10	10	-	"
Fort Gibson	47.80	67.80	54.93	56.84	85	34	51	1	8	2	6	9	-	3	1	S.E.	11	15	4	-	"
Augusta Arsl.	52.16	68.66	61.30	60.71	76	42	34	-	11	9	-	3	-	4	3	N.W.	19	10	1	-	Fair.
Canton. Jesup	54.33	65.83	57.70	59.29	80	30	50	4	5	4	-	3	3	10	1	S.W.	17	3	10	-	"
Petite Coquille	63.20	73.03	67.73	67.99	83	48	35	2	2	8	7	6	3	1	1	N.E.	22	7	1	-	"
St. Augustine	66.00	70.90	68.20	68.37	78	63	15	3	5	11	2	6	-	3	-	N.E.	20	8	2	-	"
Canton. Brooke	63.80	78.46	68.83	70.36	86	54	32	3	9	12	-	1	1	4	-	N.E.	23	7	-	-	"

No. XII. DECEMBER.

PLACES OF OBSERVATION.	THERMOMETER.							WINDS.									WEATHER.				
	Mean Temperature.			Aggregate Mean Temperature	Highest degree.	Lowest degree.	Range.	N.	N.W.	N.E.	E.	S.E.	S.	S.W.	W.	Prevailing.	Fair.	Cl'y.	Rain.	Snow.	Prevailing.
	A.M.	P.M.	P.M.					Days.	Days.	Days.	Days.	Days.	Days.	Days.	Days.		Days.	Days.	Days.	Days.	
	VII.	II.	IX.																		
Fort Brady	22.45	26.48	25.06	24.66	58	-5	63	-	9	2	12	5	-	3	-	E.	4	7	3	17	Cl'dy.
Hancock Bar'ks	23.80	32.58	25.19	27.19	55	-6	61	1	12	8	-	7	-	3	-	N.W.	14	4	8	5	"
Fort Snelling	11.12	21.67	14.12	15.64	53	-26	79	7	8	1	4	2	1	4	4	N.W.	13	3	-	15	"
Fort Howard	17.54	24.45	20.45	20.81	48	-22	70	4	6	1	1	1	12	4	2	S.	9	13	-	9	"
Fort Preble	29.77	36.00	31.45	32.41	53	0	53	-	5	1	1	4	1	6	13	W.	16	6	6	3	Fair.
Fort Niagara	36.83	41.29	38.93	39.02	63	11	52	1	3	2	3	4	2	6	9	W.	5	8	8	10	Cl'dy.
Fort Constitu'on	31.67	38.19	30.35	33.40	52	6	46	-	8	5	2	-	3	4	9	W.	14	11	5	1	"
Fort Wolcott	34.58	41.70	36.51	37.59	56	10	46	-	7	5	2	-	2	7	8	W.	6	18	4	3	"
Fort Armstrong	23.00	30.42	25.77	26.39	68	-16	84	3	1	2	4	4	1	9	7	S.W.	17	11	2	1	Fair.
West Point	35.16	39.16	36.67	37.33	55	15	40	3	11	1	1	-	12	2	1	S.	17	8	5	1	"
Fort Columbus	34.11	40.19	36.58	36.96	48	10	38	1	8	-	5	1	-	10	6	S.W.	18	9	3	1	"
Washington city	32.54	43.25	36.19	37.33	60	4	56	-	13	6	1	-	4	5	2	N.W.	9	7	13	2	Cl'dy.
Jefferson Bar'ks	28.58	35.16	62.41	42.05	65	-15	80	-	14	7	2	1	-	3	4	N.W.	16	4	11	-	Fair.
Fortress Monroe	44.00	50.54	46.45	47.00	65	21	44	1	2	9	1	-	1	14	3	S.W.	19	6	6	-	"
Fort Gibson	36.90	48.22	36.25	40.46	80	3	77	1	8	3	8	3	1	3	4	N.W.	17	8	3	3	"
Augusta Arsl.	42.51	55.41	49.19	49.04	75	12	63	1	10	1	-	10	1	7	1	S.E.	16	6	9	-	"
Canton. Jesup	42.38	54.32	47.67	48.12	72	14	58	4	9	3	-	2	5	3	5	N.W.	17	8	6	-	"
Petite Coquille	54.70	60.74	57.12	57.52	78	27	51	3	5	5	5	8	1	1	3	S.E.	19	7	5	-	"
St. Augustine	57.48	64.12	60.29	60.63	78	30	48	-	12	5	-	9	2	3	-	N.W.	16	2	13	-	"
Cant. Brooke	56.48	79.03	61.25	65.59	80	30	50	-	8	9	2	5	4	3	-	N.E.	20	8	3	-	"

No. XIII. MEAN OF THE OBSERVATIONS FOR 1830.

PLACES OF OBSERVATION.	Latitude.	Longitude.	THERMOMETER. Mean Temperature. A.M. VII.	P.M. II.	P.M. IX.	Aggregate Mean Temperature.	Highest degree.	Lowest degree.	Range.	WINDS. N. Days.	N.W. Days.	N.E. Days.	E. Days.	S.E. Days.	S. Days.	S.W. Days.	W. Days.	Prevailing.	WEATHER. Fair. Days.	Cl'dy. Days.	Rain. Days.	Snow Days.	Prevailing
Fort Brady	46.39	84.83	40.15	49.44	40.56	43.38	93	-26	119	3.33	6.08	1.50	5.42	6.58	1.25	3.83	2.50	S.E.	9.50	13.17	4.50	3.25	Cl'dy.
Haucock Bar'ks	46.10		35.46	50.81	40.58	42.28	95	-23	118	1.17	9.33	6.83	1.92	6.67	1.67	2.75	0.08	N.W.	18.00	2.50	6.67	2.83	Fair.
Fort Snelling	44.53	93.08	44.93	54 97	45.91	48.60	94	-26	120	1.92	4.33	1.33	0.92	3.33	3.00	8.08	7.50	S.W.	17.92	6.67	3.50	2.33	,,
Fort Howard	44.40	87.00	40.89	54.99	44 44	46.67	100	-26	126	6.18	2 67	2.00	1.58	2.18	12.58	1.25	2.00	S.	15.08	9.75	3.08	2.50	Cl'dy.
Fort Preble	43.38	70.18	42.71	53.44	44.12	46.76	94	-16	110	1.67	2.17	2.50	2.75	2.33	4.92	5.17	8.92	W.	14.92	8.67	5.50	1.33	,,
Fort Niagara	43.15	79.05	50 66	57.80	53.46	53.97	98	0	98	2.25	3.08	4.17	3.33	2.33	3.75	4.68	6.84	W.	15.67	6.67	6.33	1.75	Fair.
F't Constitution	43.04	70.49	44.62	52.35	45.19	47.39	91	-10	101	1.83	5.67	5 75	1.83	0.58	7.00	3.84	3.92	S.	17.50	9.17	3.00	0.75	,,
Fort Wolcott	41.30	71.18	44.68	56.50	48.16	49.78	89	0	89	1.17	7.67	6.25	0.83	2.25	0.75	9.00	2.50	S.W.	13.67	10.75	5.25	0.75	Cl'dy.
Fort Armstrong	41.28	90.33	48.51	59.81	51.42	53.25	98	-24	122	4.75	1.92	2.25	3.58	2 50	7.67	3.42	4.33	S.	20.00	8.92	1.25	0.25	Fair.
West Point	41.22	73.57	48.31	58.49	51.01	52.60	92	-6	98	5.58	6.50	2.08	1.50	5.75	4.08	2.00	2.67	N.W.	19.42	7.17	3.42	0.42	,,
Fort Columbus	40.42	74.02	50.62	61.65	52.23	54.83	98	5	93	0.33	7.83	6.70	1.00	2.58	1.17	9.08	1.75	S.W.	21.08	6.33	2.75	0.25	,,
Washington city	38.41	76.55	50.82	56.03	56.25	54.37	98	4	94	1.42	9.42	4.17	0.92	2.50	6.17	4.92	0.92	S.	15.58	8.42	6.08	0.33	,,
Jefferson Bar'ks	38.28	90.08	53.25	63.77	58.55	58.52	98	-15	113	3.08	4.83	1.42	1.92	3.92	9.67	3.25	2.33	S.	18.92	7.08	4.33	0.08	,,
Fortress Monroe	37.02	76.12	58.40	65.14	61.31	61.62	94	21	73	3.92	2.83	6.92	1 67	2.75	1.08	8.58	3.42	S.W.	16.08	10.25	3.92	0.17	,,
Fort Gibson	35.30	95.10	56.69	76.63	61.86	65.06	107	3	104	1.75	3.08	4.92	2.83	15.00	0.83	1.42	0.58	S.E.	19.17	6.67	4.17	0.42	,,
Augusta Arsl.	33.28	81.53	57.75	74.07	66.25	66.02	102	12	90	0.42	5.75	4.08	0.08	7.00	1.08	9.67	1.58	S.W.	18.25	6.42	5.58	0.17	,,
Canton. Jesup	31.30	93.47	60.69	73.91	64.90	66.50	99	14	85	3.25	5.58	5.33	0.75	2.58	4.08	5.42	3.25	N.W.	18.58	7.75	4.00	0.08	,,
Petite Coquille	30.10	89.38	67.46	77.38	71.82	72.22	98	27	71	3.92	3.33	7.08	4.08	3.83	1.83	3.00	3.33	N.E.	23.67	5.08	1.67	-	,,
St. Augustine	29.48	81.35	68.09	75.38	70.07	71.18	94	30	64	1.58	2.33	9.08	0.67	10.67	1.08	3.25	1.75	S.E.	17.83	5.25	7.33	-	,,
Canton. Brooke	27.57	82.35	68.24	80.29	70.46	73.00	92	30	62	1.67	4.92	7.92	2.17	4.42	2.50	4.92	1.92	N.E.	19.33	8.67	2.42	-	,,

Abstract [A] showing the mean temperature for each month, each season, and the whole year.

Years of observation.	PLACES OF OBSERVATION..	Lat.	Mean annual temp.	MEAN TEMP. OF THE SEASONS.				MEAN TEMPERATURE FOR EACH MONTH.											
				Winter.	Spring.	Sum'r.	Aut'n.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1826–7–8	Fort Brady	46°39′	41.84	21.67	39.36	62.54	45.46	18.24	20.24	26.90	37.20	53.91	57.87	65.85	63.91	56.19	46.43	33.75	22.49
do	„ Snelling	44 53	45.77	17.29	45.67	72.80	47.35	13.59	19.27	31.19	42.49	63.32	71.94	74.77	71.68	58.12	49.50	34.15	15.08
1828–9–30	„ Preble	43 38	46.92	26.71	44.27	67.45	49.29	22.54	25.07	33.24	45.01	54.57	64.75	69.59	68.00	58.12	49.20	40.28	32.52
1829–30	„ Niagara	43 15	51.69	30.46	47.23	72.19	56.98	26.86	25.20	34.39	47.52	59.77	68.90	74.60	73.06	63.85	58.94	48.12	39.32
1828–9–30	„ Wolcott	41 30	50.10	33.21	48.66	67.93	53.21	30.77	30.39	36.96	45.38	55.75	64.84	69.45	69.50	61.69	53.10	44.84	38.45
do	„ Armstrong	41 28	51.57	26.86	50.53	76.06	52.60	24.49	24.59	36.48	51.29	63.83	74.01	77.77	76.06	62.22	55.36	40.22	31.49
do	West Point	41 22	52.74	32.81	50.44	73.28	54.51	29.52	29.74	38.88	50.54	61.90	70.88	74.53	74.42	65.33	52.66	45.55	39.15
do	Washington	38 41	55.68	37.85	54.70	76.83	56.97	35.90	36.53	44.50	53.71	65.88	75.48	78.02	76.98	66.99	56.41	47.50	41.12
do	Jefferson Barracks	38 28	57.77	37.37	58.63	78.54	56.53	35.42	33.63	46.68	59.18	70.04	77.90	78.67	79.09	67.11	56.12	46.36	43.07
do	Fortress Monroe	37 02	61.57	45.51	58.25	78 50	64.01	44.67	43.40	49.13	57.58	68.04	76.49	79.69	79.32	71.85	64.33	55.84	48.45
do	Cant. Gibson	35 30	62.90	44.31	62.49	81.14	64.90	45.47	41.25	53.51	61.28	72.69	78.65	81.49	83 28	74.61	65.95	54.12	46.20
do	Augusta Arsl.	33 28	65.24	50.66	64.30	81.21	64.49	50.00	49.44	55.90	64.29	72.72	81.06	81.55	81.02	72.73	64.76	55.97	52.55
do	Petite Coquille	30 10	71.40	59.05	70.13	83.44	72.98	57.71	58.47	63.86	69.28	77.41	82.73	83.77	83.83	80.56	73.10	61.95	61 32
1825–8–30	St. Augustine	29 48	72.24	62.83	70.55	82.05	73.56	62.15	64.97	66.53	68.68	76.44	81.12	82.36	82.68	79.56	73.61	67.47	61.38
do	Cant. Brooke	27 57	73.19	65.02	71.71	81.04	74.59	63.75	66.56	66.48	71.27	77.39	80.90	81.43	80.79	79.01	75.04	69.71	64.76
	Fort Vancouver, (Oregon, Ter.)	45 37	51.75	41.33	48.00	65.00	52.67	38.00	43.00	44.00	46.00	54.00	63.00	66.00	66.00	61.00	54.00	43.00	43.00
	North Cape	71 00	32 00	23.72	29.66	43.34	32.08												
	Uleo (Lap.)	65 03	35.08	11.84	27.14	57.74	35.96												
	Edinburgh	55 58	47.31	39.40	44.70	57.30	47.86	40.17	39.54	39. 60	45.84	48.67	54.85	59.31	57.74	55.61	48.37	39.60	38.50
	Moscow (Russ.)	55 45	40.10	10.78	44.06	67.10	38.30												
	London	51 31	50.39	39.12	48.76	62.32	51.35	37.36	40.44	42.64	48.00	55.64	60.00	63.43	63.52	58.80	51.78	43.47	39.58
	Environs of L'don	—	48.81	37.20	48.06	60.80	49.13	34.16	39.78	41.51	46.89	55.79	58.66	62.40	61.35	56.22	50.24	40.93	37.66
	Penzance	50 7	52.16	44.66	49.66	60.50	53.83	43.00	44.50	46.50	48.50	54.00	59.00	61.00	61.50	58.00	54.50	49.00	46.50
	Paris	48 50	51.50	38.43	50.40	64.47	52.30	35.60	40.50	43.50	49.60	58.10	62.50	65.70	65.20	60.40	52.40	44.20	39.20
	Nice	43 41	59.48	47.82	56.23	72.26	61.63	45.85	49.00	51.45	57.00	63.00	69.00	73 50	74.30	69.35	61.85	53.70	48.60
	Montpelier	43 36	57.60	44.20	53.33	71.30	61.30	42.00	45.00	47.00	53.00	60.00	67.00	72.00	75.00	71.00	61.00	52.00	46.00
	Rome	41 54	60.70	48.90	57.65	72.16	63.96	47.65	49.45	52.05	56.40	64.50	69.17	73.30	74.02	69.50	63.60	58.80	49.62
	Naples	40 50	61.40	48.50	58.50	70.83	64.50	46.50	48.50	52.00	57.00	66.50	71.00	75.00	76.50	72.50	65.00	54.50	50.50
	Madeira	32 37	64.56	59.50	62.20	69.33	67.23	59.50	58.50	61.06	62.50	63.00	65.00	70.00	73.00	71.50	67.50	62.70	60.50
	Cairo	30 2	72.12	58.52	73.58	85.10	71.48	58.10	56.12	64.58	77.90	78.26	83.66	85.82	85.82	79.16	72.32	62.96	61.34
	Cumana (S. Am.)	10 27	81.86	80 24	83.66	82.04	80.24												

Abstract [B] *showing the difference between the mean temperature of each season and of each month.*

PLACES OF OBSERVATION.	Annual mean temperature.	Diff. of the mean temp. of winter and summer.	Diff. of the mean temp. of warmest and coldest m'ths.	Mean diff. of successive months.	DIFFERENCE OF THE SUCCESSIVE SEASONS.				DIFFERENCE OF THE SUCCESSIVE MONTHS.											
					of winter and spring.	of spring and sum'r.	of sum'r and autumn.	of autumn and winter.	of Jan. and Feb.	of Feb. and March.	of March and April.	of April and May.	of May and June.	of June and July.	of July and August.	of August and Sept.	of Sept. and Oct.	of Oct. and Nov.	of Nov. and Dec.	of Dec. and Jan.
Fort Brady	41.84	40.87	47.61	7.94	17.69	23.18	7.08	23.79	2 00	6.66	10.30	16.71	3.96	7.98	1.94	7.72	9.76	12.68	11.26	4.25
„ Snelling	45.77	55.51	61.18	10.20	28.38	27.13	25.45	30.06	5.68	11.92	11.30	20.83	8.62	2.83	3.09	13.56	8.62	15.35	19.07	1.49
„ Preble	46.92	40.74	47.05	7.84	17.56	23.18	18.16	22.58	2,53	8.17	11.77	9.56	10.18	4.84	1.59	9.88	8.92	8.92	7.76	9.98
„ Niagara	51.69	41.73	49.40	8.22	16.77	24.96	15.21	26.52	1,66	9.19	13.13	12.25	9.13	5.50	1.54	9.21	4.91	10.82	8.80	12.46
„ Wolcott	50.10	34.72	39.11	6.52	15.45	19.27	14.72	20.00	0.38	6.57	8.42	10.37	9.09	4.61	0.05	7.81	8.59	8.26	6.39	7.68
„ Armstrong	51.57	49 20	53.28	8.80	23.67	25.53	23.46	25.74	0.10	11.89	14.81	12.54	10.18	3.76	1.71	13.84	6.86	15.14	8.73	7.00
West Point	52.74	40.47	45.01	7.50	17.63	22.84	18.77	21.70	0.22	9.14	11.66	11.36	8.98	3.65	0.11	9.09	12.67	7.11	6.40	9.63
Washington	55.68	38.98	42.12	7.02	16.85	22.13	19.86	19.12	0.63	7 97	9.21	12.17	9.60	2.54	1.04	9.99	10.58	8.91	6.38	5.22
Jefferson Barracks	57.77	41.17	45.46	7.58	21.26	19.91	22.01	19.16	1.79	13.05	12.50	10.86	7.86	0.77	0.42	11.98	10.99	9.76	3 29	7.65
Fortress Monroe	61.57	32.99	36.29	6.04	12.74	20.25	14.49	18.50	1.17	5.73	8.45	10.46	8.45	3.20	0.37	7.47	7.52	8.49	7.39	3.78
Cant. Gibson	62.90	36.83	42.03	7.00	18.18	18.65	16.24	20.59	4.22	12.26	7.77	11.41	5.96	2.84	1.79	8.67	8.65	11.83	7.92	0.73
Augusta Arsl.	65.24	30.55	32.11	5.35	13.64	16.91	16.72	13.83	0.56	6.46	8.39	8.43	8.34	0.49	0.53	8.29	7.97	8.79	3.42	2.55
Petite Coquille	71.40	24.39	26.12	4.35	11.08	13.31	10.46	13.93	0.76	5.39	5.42	8.13	5.32	1.04	0.06	3.27	7.46	11.15	0.63	3.61
St. Augustine	72.24	19.22	21.30	3.55	7.72	11.50	8.49	11.41	2.82	1.56	2.15	7.76	4.68	1.24	0.32	3.12	5.95	6.14	6.09	0.77
Cant. Brooke	73.19	16.02	17.68	2.97	6.69	9.33	6.45	9.57	2.81	0.08	4.79	6.12	3.61	0.53	0.64	1.78	3.97	5.33	4.95	1.01
Ft. Vancouver (Oregon Ter.)	51.75	23.67	28.00	4.25	6.67	17.00	12.33	11.33	5.00	1.00	2.00	8.00	9.00	3.00	0.00	5.00	7.00	11.00	0.00	0.00
North Cape	32.00	19.62	24.48		5.94	13.68	11.26	8.36												
Uleo (Lap.)	37.08	45.90	53.82		15.30	30.60	21.78	24.12												
Edinburgh	47.31	17.90	20.81	3.65	5.30	12.60	9.44	8.46	0.63	0.06	6.24	3.17	6.18	4.48	1.57	2.13	7.24	8.77	1.10	1.67
Moscow (Russ.)	40.10	56.32	64.44		33.28	23.04	28.80	27.52												
London	50.39	23.20	26.17	4.36	9.64	13.56	11.00	12.22	3.08	2.20	5.36	7.64	4.36	3.43	0.10	4.73	7.00	8.31	3.89	2.22
Environs of London	48.81	23.60	28.24	4.87	10.86	12.74	11.67	11.93	5.62	1.73	5.38	9.90	2.87	3.74	1.05	5.13	6.00	9.31	3.27	3 50
Penzance	52.16	15.84	18.50	3.05	5.00	10.84	6.67	9.17	1.50	2.00	2.00	5.50	5.00	2.00	0.50	3.50	3.10	5.50	2.50	3.50
S. W. of France	55.29	26.42	30.87	4.47	12.08	14.59	12.74	14.00	4.55	1.45	8.52	7.33	4.52	6.80	3.72	3.22	11.08	6.27	5.27	3.94
Italy	59.46	27.56	32.10	5.75	11.53	16.03	11.33	16.70	3.50	4.33	6.21	7.63	5.80	5.12	0.82	4.30	9.53	9.06	5.85	3.40
Madeira	64.56	9.83	14.50	2.41	2.70	7.13	2.10	7.73	1.00	2.56	1.44	0.50	2.00	5.00	3.00	1.50	4.00	4.80	2.20	1.00
Cairo	72.17	26.58	27.72	5.50	15.06	11.58	13.62	13.00	2.00	8.46	13.32	0.36	5.40	2.16	0.00	6.66	6.84	10.64	1.61	3.24
Cumana (S. America)	81.86	1.80	5.22		3.42	1.62	1.80	0.00												

Abstract [C] containing the annual and monthly ranges of temperature.

PLACES OF OBSERVATION.	Mean annual temperature.	ANNUAL RANGE.			Mean of the monthly ranges.	JAN.			FEB.			MARCH.			APRIL.			MAY.			JUNE.			JULY.			AUGUST.			SEPT.			OCT.			NOV.			DEC.		
		Range.	Max. of the year.	Min. of the year.		Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.
Ft. Vancouver (Oregon Ter.)	51.75	78	95	17	37	39	58	17	23	55	32	28	60	32	42	70	32	43	75	32	50	95	45	55	95	40	51	95	44	45	88	43	16	66	50	26	58	32	23	55	32
Fort Brady	41.84	105	86	-19	44	60	41	-19	58	44	-14	59	50	-9	43	58	15	44	76	32	46	86	40	32	82	50	36	83	47	38	76	38	43	69	26	38	57	19	47	41	-6
„ Snelling	45.77	116	94	-22	50	64	41	-23	66	49	-17	66	56	-10	51	68	17	46	83	37	38	92	54	33	92	59	35	89	54	43	82	39	55	82	27	47	58	11	54	42	-12
„ Preble	46.96	98	91	-7	39	52	45	-7	46	45	-1	47	57	10	34	67	35	38	77	39	36	84	48	35	91	56	30	86	56	33	75	42	38	68	30	34	58	24	51	54	3
„ Niagara	51.69	92	93	1	38	52	53	1	49	52	3	42	57	15	46	79	33	43	85	42	28	86	58	34	93	59	26	87	61	35	83	48	32	76	44	27	61	34	45	61	16
„ Wolcott	50.10	80	84	4	34	45	49	4	37	47	10	38	57	19	34	67	33	36	77	41	30	82	52	26	84	58	24	82	58	34	79	45	33	67	34	34	62	28	42	56	14
„ Armstrong	51.57	107	96	-11	48	60	49	-11	65	56	-9	57	69	12	51	80	29	46	86	40	38	93	55	36	96	60	33	93	60	42	87	45	46	83	37	43	64	21	61	63	2
West Point	52.74	91	93	2	41	52	54	2	55	57	2	55	72	17	45	78	33	37	83	46	30	89	59	32	93	61	26	87	61	36	87	51	41	73	32	36	64	28	47	63	16
Washington	55.68	83	95	12	40	45	58	13	46	58	12	50	72	22	43	78	35	35	84	49	30	92	62	32	95	63	32	94	62	45	90	45	43	75	32	37	67	30	46	62	16
Jefferson Barracks	57.77	90	97	7	44	51	62	11	63	70	7	43	75	32	45	82	37	43	89	46	37	96	59	34	97	63	33	97	64	40	90	50	40	79	39	42	68	26	53	64	11
Fortress Monroe	61.57	68	93	25	31	37	62	25	33	61	28	42	69	27	37	78	41	29	82	53	25	90	65	25	93	68	28	89	71	26	86	60	18	72	54	33	72	39	35	64	29
Cant. Gibson	62.90	89	104	15	49	59	77	18	56	71	15	54	82	28	53	87	34	43	91	48	38	100	63	31	100	69	39	104	65	45	98	53	55	92	37	54	84	30	62	82	20
Augusta Arsl.	65.24	73	98	25	40	43	68	25	40	70	30	49	80	31	50	86	36	37	91	54	34	94	60	31	98	67	27	95	68	40	92	52	37	81	44	40	75	35	51	76	25
Petite Coquille	71.40	62	94	32	31	44	76	32	38	74	36	34	80	46	34	84	50	24	89	65	20	92	72	19	93	74	19	94	75	28	92	64	32	86	54	37	80	43	41	79	38
St. Augustine	72.24	51	92	41	23	35	78	43	30	79	49	26	78	53	31	80	49	20	88	68	17	90	73	14	92	78	12	91	79	14	86	72	22	82	60	22	78	56	36	77	41
Cant. Brooke	73.19	52	92	40	29	34	77	43	35	81	46	35	84	49	35	87	52	23	90	67	24	91	67	19	92	73	19	92	73	23	91	68	32	88	56	32	84	52	40	80	40
*London	50.39	64	86	22	34	28	50	22	27	52	25	32	61	29	37	69	32	39	75	36	48	86	38	33	77	44	38	82	44	35	75	40	33	65	32	30	57	27	30	54	24
*Environs of London	48.81	67	83	16	38	33	49	16	35	54	19	36	60	24	43	69	26	45	78	33	41	80	39	42	83	41	37	79	42	41	75	34	38	68	30	34	56	22	33	53	20
*Penzance (Eng.)	52.16	49	76	27	24	26	54	28	22	55	33	25	59	34	26	62	36	27	68	41	26	72	46	22	73	51	22	73	51	23	69	46	24	64	40	21	57	36	22	56	34
Montpelier	57.60	59	86	27	23	26	53	27	25	55	30	23	58	35	23	64	41	22	71	49	24	80	56	23	85	62	21	86	65	20	75	55	23	71	48	22	62	40	25	57	32
Nice	59.48	60	87	27	21	31	58	27	21	58	37	24	65	41	23	69	46	26	77	41	20	78	58	15	81	66	18	87	69	21	82	61	22	70	48	18	61	43	19	59	40
Rome	60.70	62	91	29	28	29	58	29	27	60	33	28	65	37	30	74	44	28	80	52	28	88	60	27	91	64	29	91	62	30	85	55	31	77	46	28	67	39	29	60	31
Naples	61.40	64	93	29	29	29	58	29	29	60	31	31	69	38	35	78	43	35	86	51	32	88	56	29	93	64	29	91	62	28	88	60	28	79	51	20	64	44	27	61	34
Madeira	68.89	23	77	54	12	12	68	56	11	68	57	13	67	54	13	71	58	15	75	60	14	76	62	12	77	65	10	77	67	11	77	66	11	76	65	12	71	59	11	69	50

* Observations made with the Register Thermometer.

NOTE.

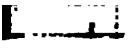
It is found, upon a further examination of the "Diaries of the Weather," that the observations upon the rain-guage have been sufficiently extensive to warrant a tabular arrangement of the data. The following abstract exhibits the observations made within the last four years, condensed into annual results.

To determine the quantity of rain that falls upon any point of the earth's surface, is an important element in meteorology. The table now given affords evidence of the valuable information to be derived from this source. The data, however, are not sufficiently extensive to authorize general conclusions. West Point gives the highest mean in the table, the annual quantity being 79.82 inches. This phenomenon may be referred to the local circumstances of the place, as high mountains are supposed to have an attraction for the clouds, whilst their low temperature promotes the formation of rain. Fort M'Henry gives, as the mean of three years, 78 inches; a result that seems the more extraordinary, when it is known that the mean annual quantity, based on eight years' observation, from 1817 to 1824 inclusive, is stated at 39.89 inches. It is found, however, that there is little disparity in the result of each year, as exhibited in the following table.

ABSTRACT D.

PLACES OF OBSERVATION.	Latitude.	Longitude.	OBSERVERS.	1836.	1837.	1838.	1839.	Mean annual quantity in inches.
Fort Constitution	43.05	70.45	Ass. Surg. Sargent	28.10	28.16	31.84	27.28	28.85
Watertown Arsl.	42.21	72.12	A. Ass. Surg. Adams	..	32.16	44.01	42.90	39.69
Fort Wood	40.43	74.01	Ass. Surgs. Eaton and Monroe	49.09	51.00	41.51	50.03	47.90
„ Hamilton	40.43	71.01	Ass. Surg. Eaton and A. Ass. Surg. Carpenter	..	..	39.70	51.72	45.71
Hancock Barracks	46.10	67.55	Ass. Surg. Sprague	..	33.68	38.37	38.70	36.92
Waterolirt Arsl.	42.30	73.13	A. Ass. Surgs. Hungerford and Viele	44.30	32.06	30.80	29.73	34.22
West Point	41.24	73.51	Surg. Wheaton	50.14	44.88	44.00	55.80	48.70
Allegheny Arsl.	40.35	80.08	Ass. Surg. Day	..	35.67	23.10	25.64	28.14
Dearbornville Arsl.	42.22	82.55	A. Ass. Surg. Sweeney	40.00	..	29.84	24.05	31.30
Fort Brady	46.39	84.43	Ass. Surgs. M'Dougall, Porter, and Holt	..	36.93	34.73	24.01	31.89
„ Howard	44.40	87.00	Surg. Satterlee, Ass. Surg. Worrell, and A. Ass. Surg. Ward	37.64	41.55	42.83	31.32	38.83
„ Winnebago	43.35	89.30	Surg. Foot and Ass. Surg. Laub	..	31.32	27.85	36.47	31.88
„ Snelling	44.53	93.08	Ass. Surgs. Wright and Emerson	..	41.57	28.21	21.19	30.32
„ M'Henry	39.17	76.36	A. Ass. Surg. Roberts	39.50	45.00	39.10	39.60	40.80
„ Monroe	36 51	76.19	Surg. Finley and Ass. Surg. Archer	..	40.70	44.74	72.20	52.55
Washington City	38.53	76.55	Wm. G. Cranch, Esq.	47.27	31.80	35.10	36.97	34.62
Fort Crawford	.03	90.53	Surg. Elwes and Ass. Surg. M'Laren	..	33.65	23.31	31.66	29.54
„ Leavenworth	39.20	95.05	Surg. Macomb	..	38.45	26.28	33.32	32.68
St. Louis Arsl.	38.40	80.10	Surg. Beaumont	..	26.33	21.90	..	24.12
Fort Smith	35.30	94.25	Ass. Surg. Hammond	..	37.00	27.30	42.62	35.64
„ Gibson	35.49	18.06	Surgs. De Camp and Wharton, and Ass. Surg. Bailey	..	31.05	18.49	42.39	30.64
„ Towson	33.33	94.55	Ass. Surgs. Wells and Southgate	..	43.80	34.40	62.00	46.73
„ Jesup	31.30	93.47	Surg. Craig	48.85	48.54	47.32	45.00	47.43
New Orleans	29.57	90.14	Dr. Barton			70.89	50.82	51.85
Key West	24.33	81.52	W. A. Whitehead, Esq.					31.39

THE END.



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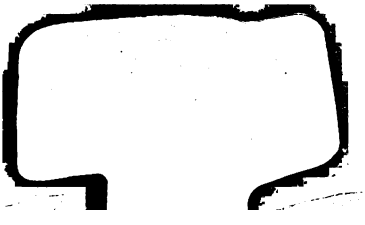
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